

Metrics for Statistics

This section lists and describes the metrics used by HVR for tracking the replication performance. By using these metrics the performance of replication is represented graphically in [Statistics](#) and [Topology](#) for easier tracking of performance.

The unit of measurement is different for each metrics, following are the units and its description:

Unit	Description
%	Percent. When used for compression this means ratio of bytes left after compression. So if 100 bytes are compressed by 70% then 30 bytes remain.
bytes	
changes	Changes of tables affected by insert, update or delete statements. Updates are sometimes moved as 2 rows (before-update and after-update).
cycles	A capture or integrate cycle.
files	
int	Integer number
lines	Number of message lines written to log file. A single line could be an error message which mentions multiple failed changes
rows	Rows of tables affected by insert, update or delete statements.
rows/sec	Measures the average of 'rows' or 'changes' replicated per second.
runs	Number of times a job has been run.
secs	Seconds
string	
time	Timestamp
transaction	Unit 'transaction' means a group of changes terminated by a commit (not just a changed row).

The metrics gathered by the **hvrstats** job is divided into the following groups:

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In the following tables,



- the metric names highlighted using green color indicate the basic/important metrics that are gathered by the **hvrstats** job when action **Scheduling /StatsMetrics=LITE** is defined. Also note that this is the default metric gathering mode since HVR 5.7.0/17 and 5.7.5/11.
- the column **Source** indicates location from where the **hvrstats** job gathers the metric information - router file or HVR log file.

Latency Metrics

Metric Name	5701647	Source	Remarks
Capture Latency Min	secs	Log file	This is the minimum latency value as reported by the capture job. This value is taken from the log message of the capture job. Therefore a value is only available when the capture job captures some rows. In older HVR versions this metric was called Minimum Capture Latency .
Capture Latency Max	secs	Log file	This is the maximum latency value as reported by the capture job. This value is taken from the log message of the capture job. Therefore a value is only available when the capture job captures some rows. In older HVR versions this metric was called Maximum Capture Latency .
Integrate Latency Min	secs	Log file	This is the minimum latency value as reported by the integrate job. This value is taken from the log message of the integrate job. Therefore a value is only available when the integrate job integrates some rows. In older HVR versions this metric was called Minimum Integrate Latency .
Integrate Latency Max	secs	Log file	This is the maximum latency value as reported by the integrate job. This value is taken from the log message of the integrate job. Therefore a value is only available when the integrate job integrates some rows. In older HVR versions this metric was called Maximum Integrate Latency .
Capture Rewind Interval	secs	Router file	

Captured Row Counts Metrics

Metric Name	5701647	Source	Remarks
Captured Inserts	rows	Log file	Number of captured inserts.
Captured Updates	rows	Log file	Number of captured updates. Updates are captured as 2 rows not 1, unless Capture /NoBeforeUpdate is defined. This means captured inserts + updates + deletes can be less than captured rows.
Captured Deletes	rows	Log file	Number of captured deletes.

Captured Changes	rows	Log file	Number of all captured changes. That is captured inserts + updates + deletes . Note that captured changes can be less than captured rows.
Captured Changes Backdated	rows	Log file	A 'backdated' version of ' Captured Changes '. Backdated means latency in the message is used to assign the value to a time earlier than the message's timestamp. For example if a message 'Scanned 100 changes from 30 mins ago' has timestamp '16:55:00' then 100 is both added to 'Captured Changes' for 16:55 and also to 'Captured Changes Backdated' for 16:25. Visual comparison of a back dated metric to its regularly dated one can display bottleneck pattern; the area under both graph lines should be identical (the total amount of work done) but if the backdated graph shows a peak which quickly subsides and the regularly dated line shows a smaller rise which subsided more slowly, then a bottleneck is visible.
Captured Rows	rows	Log file	Sometimes changes (e.g. updates) are captured as 2 rows not 1. So captured inserts + updates + deletes can be less than captured rows
Captured Rows Backdated	rows	Log file	A 'backdated' version of ' Captured Rows '. Backdated means latency in the message is used to assign the value to a time earlier than the message's timestamp. For example if a message 'Scanned 100 changes from 30 mins ago' has timestamp '16:55:00' then 100 is both added to 'Captured Rows' for 16:55 and also to 'Captured Rows Backdated' for 16:25. Visual comparison of a back dated metric to its regularly dated one can display bottleneck pattern; the area under both graph lines should be identical (the total amount of work done) but if the backdated graph shows a peak which quickly subsides and the regularly dated line shows a smaller rise which subsided more slowly, then a bottleneck is visible. In older HVR versions this metric was called DBMS Log Rows .
Captured Skipped Rows	rows	Log file	Changes are skipped by HVR 'controls', e.g. after an on-line refresh.
Augmented Rows	rows	Log file	This counts situations where capture job performs DB query to fetch extra column value(s) to 'augment' other column values read from DBMS logging, These operations are relatively slow (DB query needed).

SAP Augment Selects	rows	Log file	Only occurs when SapXForm engine is used. Counts situations where capture job performs DB query to fetch extra rows to 'augment' SAP cluster rows read from DBMS logging, These operations are relatively slow (DB query needed).
Captured DDL Statements	rows	Log file	Measures number of DDL statements processed by action AdaptDDL . These can be followed by on-line refreshes which can cause row skipping. In older HVR versions this metric was called Captured DDL .

Integrated Change Counts Metrics

Metric Name	5701647	Source	Remarks
Integrated Inserts	changes	Log file	Number of integrated inserts.
Integrated Updates	changes	Log file	Number of integrated updates. Although updates can be captured as 2 rows not 1, this metric measures the updated changes, not underlying rows.
Integrated Deletes	changes	Log file	Number of integrated deletes.
Integrated Changes	changes	Log file	Number of all integrated changes. That is integrated inserts + updates + deletes . Sometimes changes (e.g. updates) are captured as 2 rows not 1. Such an update would count as 1 here (not 2). Therefore the number of changes can be less than the number of rows. This count does NOT include DDL changes (or rows refreshed due to DDL changes).
Integrated Skipped Changes	changes	Log file	Changes are skipped by HVR 'controls', e.g. during an on-line refresh or if a job is restarted after some interrupt.
Changes Coalesced Away	changes	Log file	Integrate /Burst and /Coalesce will both squeeze consecutive operations on same row (e.g. insert + 3 updates) into a single change.
Failed Inserts Saved	changes	Log file	Failed inserts written to <tbl>__f table after errors when Integrate /OnErrorSaveFailed is defined. possibly because row already existed.
Failed Updates Saved	changes	Log file	Failed updates written to <tbl>__f table after errors when Integrate /OnErrorSaveFailed is defined, possibly because row did not exist.
Failed Deletes Saved	changes	Log file	Failed delete written to <tbl>__f table after errors when Integrate /OnErrorSaveFailed is defined, possibly because row did not exist.

Failed Changes Saved	changes	Log file	Total number of changes (inserts + updates + deletes) which failed and were written to <tbl>__f table after errors when Integrate /OnErrorSaveFailed is defined, possibly because row did not exist.
Collision Changes Discarded	changes	Log file	Change which was discarded due to collision detection (action CollisionDetect) which decided change was older then current row in target DB. In older HVR versions this metric was called Discarded Changes .
Empty Updates Discarded	changes	Log file	Updates produced by the source database, which were discarded because no replicated column was changed.

Transactions Metrics

Metric Name	5701647	Source	Remarks
Captured Transactions	transaction	Log file	This metric counts number of COMMITs of transactions which contain changes to replicated tables. Note that its interesting to see if a system is dominated by large (e.g. 1000 row/commit) transactions, but comparing this filed with ' Captured Rows ' only shows an average.
Captured Transactions Backdated	transaction	Log file	A 'backdated' version of ' Captured Transactions '. Backdated means latency in the message is used to assign the value to an time earlier than the message's timestamp. For example if a message 'Scanned 100 changes from 30 mins ago' has timestamp '16:55:00' then 100 is both added to 'Captured Transactions' for 16:55 and also to 'Captured Transactions Backdated' for 16:25. Visual comparison of a back dated metric to its regularly dated one can display bottleneck pattern; the area under both graph lines should be identical (the total amount of work done) but if the backdated graph shows a peak which quickly subsides and the regularly dated line shows a smaller rise which subsided more slowly, then a bottleneck is visible. In older HVR versions this metric was called Transactions Logged in DBMS .
Integrated Transactions	transaction	Log file	Integrate will often bundle lots of smaller 'Captured Transaction' values into fewer 'Integrated Transactions' for speed. This metric measure these bundled commits, not the original ones.

Durations Metrics

Metric Name	5701647	Source	Remarks
Capture Duration Total	secs	Log file	In older HVR versions this metric was called Total Capture Duration .
Capture Duration Max	secs	Log file	In older HVR versions this metric was called Maximum Capture Duration .
Capture Duration Average	secs	Log file	In older HVR versions this metric was called Average Capture Duration .
Integrate Duration Total	secs	Log file	In older HVR versions this metric was called Total Integrate Duration .
Integrate Duration Max	secs	Log file	In older HVR versions this metric was called Maximum Integrate Duration .
Integrate Duration Average	secs	Log file	In older HVR versions this metric was called Average Integrate Duration .

Speed Metrics

Metric Name	5701647	Source	Remarks
Capture Speed Max	rows/sec	Log file	This is maximum speed reached by during this time period. For a 'cl*' value its the max speed for any job; if this is aggregated In older HVR versions this metric was called Maximum Capture Change Speed .
Capture Speed Average	rows/sec	Log file	In older HVR versions this metric was called Average Capture Change Speed .
Integrate Speed Max	rows/sec	Log file	In older HVR versions this metric was called Maximum Integrate Change Speed .
Integrate Speed Average	rows/sec	Log file	In older HVR versions this metric was called Average Integrate Change Speed .

Cycles Metrics

Metric Name	5701647	Source	Remarks
Capture Cycles	cycles	Log file	Count of capture cycles whose start occurred during this time period. This does not include 'sub-cycles' or 'silent cycles', but does include 'empty cycles'. A 'sub-cycle' happens when a busy capture job emits a block of changes but has not yet caught up to the 'top'. It can be recognized as an extra 'Scanning' message which is not preceded by a 'Cycle X' line'. A 'silent-cycle' is when a capture job sees no change activity and decides to progress its 'capture state' files but without writing an line in the log (above every 10 secs). A 'empty-cycle' is when a capture job sees no change activity and does write line in the log (above every 10 mins).
Integrate Cycles	cycles	Log file	Count of integrate cycles whose start occurred during this time period. Note that the integrate activity may fall into a subsequent period.

Byte I/O Metrics

Metric Name	5701647	Source	Remarks
Routed Bytes Written	bytes	Log file	Amount of compressed bytes HVR routed from the capture machine to the hub machine. In older HVR versions this metric was called Routed Bytes .
Routed Bytes Written Uncompressed	bytes	Log file	Amount of uncompressed bytes HVR routed from the capture machine to the hub machine. These routed bytes refer to HVR's representation of routed rows in memory. This is different from the DBMS's 'storage size' (DBMS's storage of that row on disk) For example, if a table has a varchar(100) column containing 'Hello World' which HVR manages to compress that down to 3 bytes. HVR's memory representation of varchar(100) is 103 bytes, whereas the DBMS storage is 13 bytes. In older HVR versions this metric was called Routed Bytes (uncompressed) .
Captured File Size	bytes	Log file	In a file to database or file to file replication channel, this counts the total size of the captured files. In older HVR versions this metric was called Captured File Size .
Capture DbmsLog Bytes	bytes	Log file	Amount of bytes HVR captured from the database's log file. In older HVR versions this metric was called Capture Log Bytes Read .
Capture DbmsLog Bytes Backdated	bytes	Log file	A 'backdated' version of ' Capture DbmsLog Bytes '. Backdated means latency from HVR's log message is used to assign the value to an time earlier than the message's timestamp. So this reflects when the databse wrote the bytes, not when HVR captured them. In older HVR versions this metric was called DBMS Log Bytes Written .

Compression Metrics

Metric Name	5701647	Source	Remarks
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Compression Ratio Max	%	Log file	When transporting table rows, HVR reports its 'memory compression' ratio; the number of compressed bytes transmitted over network compared with HVR's representation of that row in memory (see 'Routed Bytes Written' and 'Routed Bytes Written Uncompressed'). This different from the DBMS's 'storage compression ratio' (number of compressed bytes transmitted compared with DBMS's storage of that row on disk. Example: Say a table has a varchar(100) column containing 'Hello World' which Hvr manages to compress that down to 3 bytes. Hvr's memory representation of varchar(100) is 103 bytes, wheres the DBMS storage is 13 bytes. In this case Hvr's 'memory compression' ration is 97% (1-(3/103)) whereas the storage compression ratio would be 77% (1-(13/103)). In older HVR versions this metric was called Maximum Compression Ratio .
Compression Ratio Total		Log file	
Compression Ratio Count		Log file	
Compression Ratio Average	%	Log file	In older HVR versions this metric was called Average Compression Ratio .

Replicated Files Metrics

Metric Name	5701647	Source	Remarks
Captured Files	files	Log file	In a file to database or file to file replication channel, this counts the number of captured files.
Integrated Files	files	Log file	In a file integration this counts the number of integrated files.
Failed Files Saved	files	Log file	

Errors/Warnings Metrics

Metric Name	5701647	Source	Remarks
Errors	lines	Log file	Counts number of errors (lines matching F_J*) in the job logfile. Such an error line could affect multiple rows, or could affect one row and be repeated lots of times (so it counts as multiple 'errors'). In older HVR versions this metric was called Number of Errors .
^Errors	string	Log file	Annotation: Text of the most recent error line as additional information for metric Errors. In older HVR versions this metric was called Last Error .
Errors F_J*	lines	Log file	Groups the appearing errors by up to the 2 most significant error numbers. Example: Say error F_JA1234 happened. Then the metric 'Errors F_JA1234' will increase by 1. If the errors F_JA1234; F_JB1234: The previous error occured ...; F_JC1234: The previous error occured ...; appear then 'Errors F_JA1234 F_JB1234' will increase by 1.

^Errors F_J*	string	Log file	Annotation: Groups the appearing errors messages by up to the 2 most significant error numbers. Example: Say error F_JA1234 happened. Then the metric '^Errors F_JA1234' will hold the message of F_JA1234. If the errors F_JA1234; F_JB1234: The previous error occurred ...; F_JC1234: The previous error occurred ...; appear then '^Errors F_JA1234 F_JB1234' will hold the messages of F_JA1234 and F_JB1234.
Warnings	lines	Log file	Counts number of warnings (lines matching W_J*) in the job logfile. In older HVR versions this metric was called N umber of Warnings .
^Warnings	string	Log file	Annotation: Most recent warning line. In older HVR versions this metric was called Last Warning .
Warnings W_J*	lines	Log file	Groups the appearing warning by the warning number. Example: Say warning W_JA1234 happened. Then the metric 'Warnings W_JA1234' will increase by 1.
^Warnings W_J*	string	Log file	Annotation: Groups the appearing warning messages by the warning number. Example: Say warning W_JA1234 happened. Then the metric '^Warnings W_JA1234' will hold the message of W_JA1234.

Refresh and Compare Runs Metrics

Metric Name	5701647	Source	Remarks
Bulk Compare Job Runs	runs	Log file	
Bulk Compare Table Runs	runs	Log file	
Bulk Refresh Job Runs	runs	Log file	
Bulk Refresh Table Runs	runs	Log file	
Row-wise Compare Job Runs	runs	Log file	
Row-wise Compare Table Runs	runs	Log file	
Row-wise Refresh Job Runs	runs	Log file	
Row-wise Refresh Table Runs	runs	Log file	

Refresh and Compare Job Duration Metrics

Metric Name	5701647	Source	Remarks
Bulk Compare Job Duration Min	secs	Log file	In older HVR versions this metric was called Bulk Compare Job Dur Min .
Bulk Compare Job Duration Max	secs	Log file	In older HVR versions this metric was called Bulk Compare Job Dur Max .
Bulk Compare Job Duration Average	secs	Log file	In older HVR versions this metric was called Bulk Compare Job Dur Avg .

Row-wise Compare Job Duration Min	secs	Log file	In older HVR versions this metric was called Row-wise Compare Job Dur Min .
Row-wise Compare Job Duration Max	secs	Log file	In older HVR versions this metric was called Row-wise Compare Job Dur Max .
Row-wise Compare Job Duration Average	secs	Log file	In older HVR versions this metric was called Row-wise Compare Job Dur Avg .
Bulk Refresh Job Duration Min	secs	Log file	In older HVR versions this metric was called Bulk Refresh Job Dur Min .
Bulk Refresh Job Duration Max	secs	Log file	In older HVR versions this metric was called Bulk Refresh Job Dur Max .
Bulk Refresh Job Duration Average	secs	Log file	In older HVR versions this metric was called Bulk Refresh Job Dur Avg .
Row-wise Refresh Job Duration Min	secs	Log file	In older HVR versions this metric was called Row-wise Refresh Job Dur Min .
Row-wise Refresh Job Duration Max	secs	Log file	In older HVR versions this metric was called Row-wise Refresh Job Dur Max .
Row-wise Refresh Job Duration Average	secs	Log file	In older HVR versions this metric was called Row-wise Refresh Job Dur Avg .

Refresh and Compare Table Duration Metrics

Metric Name	5701647	Source	Remarks
Bulk Compare Table Duration Min	secs	Log file	In older HVR versions this metric was called Bulk Compare Table Dur Min .
Bulk Compare Table Duration Max	secs	Log file	In older HVR versions this metric was called Bulk Compare Table Dur Max .
Bulk Compare Table Duration Average	secs	Log file	In older HVR versions this metric was called Bulk Compare Table Dur Avg .
Row-wise Compare Table Duration Min	secs	Log file	In older HVR versions this metric was called Row-wise Compare Table Dur Min .
Row-wise Compare Table Duration Max	secs	Log file	In older HVR versions this metric was called Row-wise Compare Table Dur Max .

Row-wise Compare Table Duration Average	secs	Log file	In older HVR versions this metric was called Row-wise Compare Table Dur Avg .
Bulk Refresh Table Duration Min	secs	Log file	In older HVR versions this metric was called Bulk Refresh Table Dur Min .
Bulk Refresh Table Duration Max	secs	Log file	In older HVR versions this metric was called Bulk Refresh Table Dur Max .
Bulk Refresh Table Duration Average	secs	Log file	In older HVR versions this metric was called Bulk Refresh Table Dur Avg .
Row-wise Refresh Table Duration Min	secs	Log file	In older HVR versions this metric was called Row-wise Refresh Table Dur Min .
Row-wise Refresh Table Duration Max	secs	Log file	In older HVR versions this metric was called Row-wise Refresh Table Dur Max .
Row-wise Refresh Table Duration Average	secs	Log file	In older HVR versions this metric was called Row-wise Refresh Table Dur Avg .

Refresh and Compare Rows Metrics

Metric Name	5701647	Source	Remarks
Bulk Compare Rows	rows	Log file	
Bulk Compare Packed Rows	rows	Log file	
Row-wise Compare Rows	rows	Log file	
Row-wise Compare Packed Rows	rows	Log file	
Bulk Refresh Rows	rows	Log file	
Bulk Refresh Packed Rows	rows	Log file	
Row-wise Refresh Rows	rows	Log file	
Row-wise Refresh Packed Rows	rows	Log file	
Compare Differences Inserts	rows	Log file	
Compare Differences Updates	rows	Log file	
Compare Differences Deletes	rows	Log file	
Refresh Differences Inserts	rows	Log file	
Refresh Differences Updates	rows	Log file	
Refresh Differences Deletes	rows	Log file	

Router Rows Metrics

Metric Name	5701647	Source	Remarks
Capture Router Rows	rows	Router file	
Integrate Router Rows	rows	Router file	

Router Bytes Metrics

Metric Name	5701647	Source	Remarks
Capture Router Bytes	bytes	Router file	
Integrate Router Bytes	bytes	Router file	

Router Files Metrics

Metric Name	5701647	Source	Remarks
Capture Router Files	files	Router file	
Integrate Router Files	files	Router file	

Router Timestamps Metrics

Metric Name	5701647	Source	Remarks
Capture Rewind Time	time	Router file	
Capture Emit Time	time	Router file	
Capture Last Cycle Time	time	Router file	
Capture Router Timestamp	time	Router file	
Integrate Router Timestamp	time	Router file	
Enroll File Timestamp	time	Router file	