Queries that can be run by the customer

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Issue

This article provide you with customer-facing queries to retrieve replication-related information from the customer environment.

All gueries are supposed to run at the Distributor, either in the distribution database or msdb.

Check replication Job history and failures

Run all of these queries against the msdb database.

```
-- identify the correct job ID first
-- also note the other columns to confirm the configuration, especially the "command" column

SELECT
    sjv.job_id, sjv.name AS 'job_name', sjv.enabled, sjv.category_id, sjv.originating_server,
    sjs.subsystem, sjs.step_id, sjs.step_name, sjs.step_uid, sjs.server, sjs.database_name, sjs.retry_attempts

FROM msdb.dbo.sysjobsteps sjs

INNER JOIN msdb.dbo.sysjobs_view sjv ON sjv.job_id = sjs.job_id

WHERE subsystem IN ('Distribution','LogReader','Snapshot')

-- then feed that job ID to the stored procedure:
    exec msdb.dbo.sp_help_jobhistory @job_id = 'D55F576C-91B7-48D4-9F77-0C4F11105AD6', @mode='FULL'
```

See the <u>sample output</u> below for further details.

Check replication Agent history and failures

Run all of these queries against the distribution database.

Identify the configured replication agents

Note the naming conventions of the agent names - these will help you with narrowing down on a specific agent. If the customer provides you with a name of a failed agent, you can derive the corresponding values, including the agent id.

- Log Reader Agent: <instance FQDN>-<publisher database>-<agent id>
- Snapshot Agent: <instance FQDN>-<publisher database>-<publication name>-<agent id>
- Distribution Agent: <instance FQDN>-<publisher database>-<publication name>-<subscriber name>-<agent id>

```
-- check what agents have been configured
select * from MSlogreader_agents;
select * from MSsnapshot_agents;
select * from MSdistribution agents;
```

Sample output:

```
MSlogreader_agents:
                                                        publisher_id publisher_db publication local_job
                                                                                                            jo
   MIHLI.8F08E6D34D3B.DATABASE.WINDOWS.NET-Repl PUB-1
                                                                      Repl_PUB
                                                                                    ALL
                                                                                                            0x
MSsnapshot_agents:
                                                              publisher_id
                                                                            publisher db
                                                                                          publication
                                                                                                            pu
   MIHLI.8F08E6D34D3B.DATABASE.-Repl PUB-Publication Tran-1
                                                                            Repl PUB
                                                                                          Publication Tran
MSdistribution_agents:
                                                                             publisher_database_id
                                                                                                   publisher
   mihli.8f08e6d34d3b.da-Repl PUB-Publication Tran--1
   mihli.8f08e6d34d3b.da-Repl PUB-Publication Tran--2
                                                                                                    1
   mihli.8f08e6d34d3b.da-Repl PUB-Publication Tran-mihli.8f08e6d34d3b.da-3 1
(the "virtual" agents are related to having the "immediate sync" feature enabled on the publication)
```

Check for replication errors

MSrepl_errors contains errors encountered by any agent type. Note however that MSrepl_errors doesn't provide a correlation to the failing agent (no agent id). You will have to search the repliation agent history MSxxxxx_history tables in column error_id instead.

```
select top 1000 * from MSrepl_errors order by time desc;
```

Sample output:

```
Sample output:

id time error_type_id source_type_id source_name error_code error_text

2 2022-12-09 11:08:02.400 0 0 MSSQL_ENG 20598 The row was not found at

1 2022-12-09 11:06:06.137 0 0 MSSQL_ENG 20598 The row was not found at
```

Check agent history

```
-- get the recent output, sorted by start_date of the agent:
select top 1000 * from MSlogreader_history order by start_time desc, time desc;
select top 1000 * from MSsnapshot_history order by start_time desc, time desc;
select top 1000 * from MSdistribution_history order by start_time desc, time desc;

-- get the most recent output, sorted by event datetime:
select top 1000 * from MSlogreader_history order by time desc;
select top 1000 * from MSsnapshot_history order by time desc;
select top 1000 * from MSdistribution_history order by time desc;

-- get the output filtered on agent id:
-- agent id available from job name or from MSxxxxx_agents table - see above
select * from Distribution..MSlogreader_history where agent_id = 1 order by start_time desc, time desc;
select * from Distribution..MSsnapshot_history where agent_id = 1 order by start_time desc, time desc;
select * from Distribution..MSdistribution_history where agent_id = 3 order by start_time desc, time desc;
```

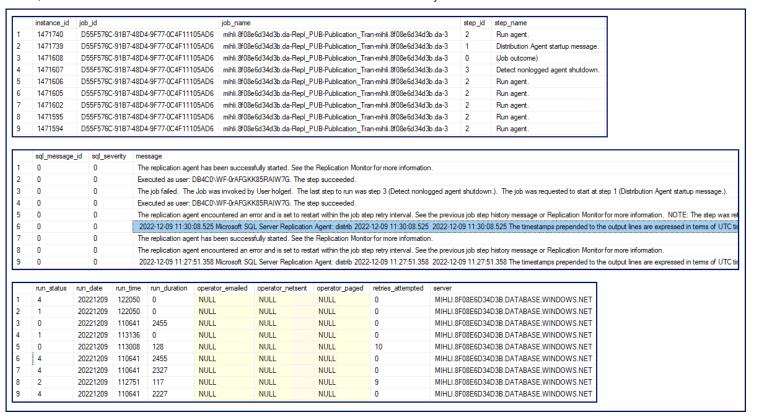
Sample output

sysjobs and jobhistory

sysjobs_view join sysjobsteps sample output:



sp_help_jobhistory sample output:



The content of the sp_help_jobhistory.message column will provide information that is similar to the OutputVerboseLevel output file. The content of the field marked in blue was the following (no PII - captured on a CSS test instance):

```
2022-12-09 11:30:08.525 Microsoft SQL Server Replication Agent: distrib
2022-12-09 11:30:08.525
2022-12-09 11:30:08.525 The timestamps prepended to the output lines are expressed in terms of UTC time.
2022-12-09 11:30:08.525 User-specified agent parameter values:
    -Subscriber mihli.8f08e6d34d3b.database.windows.net
   -SubscriberDB Repl SUB
   -Publisher mihli.8f08e6d34d3b.database.windows.net
   -Distributor mihli.8f08e6d34d3b.database.windows.net
   -DistributorSecurityMode 1
   -Publication Publication Tran
   -PublisherDB Repl PUB
   -Continuous
   -XJOBID 0x6C575FD5B791D4489F770C4F11105AD6
    -XJOBNAME mihli.8f08e6d34d3b.da-Repl PUB-Publication Tran-mihli.8f08e6d34d3b.da-3
    -XSUBSYSTEM Distribution
   -XSERVER mihli.8f08e6d34d3b.database.windows.net
   -XCMDLINE 1
   -XDB
   -XHOST np:\\.\pipe\DB4C.0-D22D2212BBF8\sql\query
   -T 500
   -XCancelEventHandle Global\Distribution-{A672B7D6-186B-41A3-B0DA-E1868E70740C}
2022-12-09 11:30:08.525 Startup Delay: 9736 (msecs)
2022-12-09 11:30:18.291 Connecting to Distributor 'mihli.8f08e6d34d3b.database.windows.net'
2022-12-09 11:30:18.416 Obtained Azure Storage Connection String for hlireplsnapshots
2022-12-09 11:30:18.416 Connecting to Azure Files Storage '\\hlireplsnapshots.file.core.windows.net\snapshots'
2022-12-09 11:30:20.760 Parameter values obtained from agent profile:
    -bcpbatchsize 0
   -commitbatchsize 100
   -commitbatchthreshold 1000
   -historyverboselevel 1
   -keepalivemessageinterval 300
   -logintimeout 15
   -maxbcpthreads 1
   -maxdeliveredtransactions 0
   -pollinginterval 5000
   -querytimeout 1800
   -skiperrors
   -transactionsperhistory 100
2022-12-09 11:30:20.776 Connecting to Subscriber 'mihli.8f08e6d34d3b.database.windows.net'
2022-12-09 11:30:20.947 Initializing
2022-12-09 11:30:21.041 42000 The row was not found at the Subscriber when applying the replicated UPDATE com
2022-12-09 11:30:21.057 Disconnecting from Subscriber 'mihli.8f08e6d34d3b.database.windows.net'
2022-12-09 11:30:21.057 Connecting to Subscriber 'mihli.8f08e6d34d3b.database.windows.net'
2022-12-09 11:30:21.119 Error executing a batch of commands. Retrying individual commands.
2022-12-09 11:30:26.151 Disconnecting from Subscriber 'mihli.8f08e6d34d3b.database.windows.net'
(...last 3 lines repeated for each retry attempt...)
2022-12-09 11:31:36.511 Connecting to Subscriber 'mihli.8f08e6d34d3b.database.windows.net'
2022-12-09 11:31:36.558 Error executing a batch of commands. Retrying individual commands.
2022-12-09 11:31:36.574 Disconnected from Azure Storage '\\hlireplsnapshots.file.core.windows.net\snapshots' w
2022-12-09 11:31:36.589 Agent message code 20598. The row was not found at the Subscriber when applying the re
```

MSlogreader_agents

```
id name publisher_id publisher_db publication local_job jo
1 MIHLI.8F08E6D34D3B.DATABASE.WINDOWS.NET-Repl_PUB-1 1 Repl_PUB ALL 1 0x
```

MSsnapshot_agents

```
id name publisher_id publisher_db publication pu
1 MIHLI.8F08E6D34D3B.DATABASE.-Repl_PUB-Publication_Tran-1 1 Repl_PUB Publication_Tran 0
```

MSdistribution_agents

MSrepl_errors

```
id
   time
                                                                                       error_text
                              error_type_id
                                            source_type_id
                                                              source_name
                                                                          error_code
   2022-12-09 11:08:02.400
                                                                           20598
                                                              MSSQL_ENG
                                                                                        The row was not found at
   2022-12-09 11:06:06.137
                                             0
                                                             {\sf MSSQL\_ENG}
                                                                           20598
                                                                                        The row was not found at
```

MSlogreader_history

agent_id	runstatus	start_time	time	duration	comments	xact_seqno	delivery_time	delivered_tran	delivered_comm
1	4	2022-12-09 08:39:45	2022-12-09 09:07:33.9	1668	No replicated transactions are available.	0x00000032000009200005	47	1	1
1	3	2022-12-09 08:39:45	2022-12-09 09:05:03.7	1518	<stats idle="1517" state="1" work="0"><reader 1"="" fetch="</td><td>0x00000032000009200005</td><td>47</td><td>1</td><td>1</td></tr><tr><td>1</td><td>3</td><td>2022-12-09 08:39:45</td><td>2022-12-09 09:00:03.2</td><td>1218</td><td><stats state=" idle="1216" work="0"></reader></stats>				

MSdistribution_history

agent_id n	unstatus start_time	time	duration	comments			xact_seqno		current_delivery_rate	current_delivery_latency	delivered_transactions
-	4 2022-12-09 08:42:			No replicated transac			0x0000003200000920			644	2
	3 2022-12-09 08:42: 3 2022-12-09 08:42:				:="1" idle="1502"> <reader <="" fetch='
:="1" idle="1201"><reader fetch=' td=""><td></td><td>0x0000003200000920 0x0000003200000920</td><td></td><td></td><td>0</td><td>2</td></reader>		0x0000003200000920 0x0000003200000920			0	2
	3 2022-12-09 08:42:				:="1" idle="901"> <reader 1"="" fetch="0</td><td></td><td>0x0000003200000320</td><td></td><td></td><td>0</td><td>1</td></tr><tr><td>3</td><td>3 2022-12-09 08:42:</td><td>20.650 2022-12-09 08:52:23.15</td><td>603</td><td><stats state=" td="" work<=""><td>="1" idle="600"><reader fetch="0</td><td>)" wait="0"></reader><writer write="</td"><td>0x0000003100000EF0</td><td>0004A00000001000</td><td>0 0</td><td>0</td><td>1</td></writer></td></reader>	="1" idle="600"> <reader fetch="0</td><td>)" wait="0"></reader> <writer write="</td"><td>0x0000003100000EF0</td><td>0004A00000001000</td><td>0 0</td><td>0</td><td>1</td></writer>	0x0000003100000EF0	0004A00000001000	0 0	0	1
,	3 2022-12-09 08:42:				="1" idle="300">						

MSsnapshot_history

agent_id	runstatus	start_time	time	duration	comments	deliver	delivere	delivery_rate	error_id	timestamp
1	2	2022-12-09 08:41:52.033	2022-12-09 08:42:18.327	26	[100%] A snapshot of 2 article(s) was generated.	0	0	0	0	0x0000000000000829
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.270	26	[71%] Inserted constraint creation command for article "SubTable" into the distribution database.	0	0	0	0	0x0000000000000828
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.263	26	[71%] Inserted constraint creation command for article 'MainTable' into the distribution database.	0	0	0	0	0x0000000000000827
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.257	26	[71%] Inserted bcp command for article 'SubTable' into the distribution database.	0	0	0	0	0x0000000000000826
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.250	26	[71%] Inserted bcp command for article 'MainTable' into the distribution database.	0	0	0	0	0x0000000000000825
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.247	26	[71%] Inserted index creation command for article 'SubTable' into the distribution database.	0	0	0	0	0x0000000000000824
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.240	26	[71%] Inserted index creation command for article 'MainTable' into the distribution database.	0	0	0	0	0x0000000000000823
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.227	26	[71%] Inserted schema command for article 'SubTable' into the distribution database	0	0	0	0	0x00000000000000822
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.220	26	[71%] Inserted schema command for article 'MainTable' into the distribution database	0	0	0	0	0x00000000000000821
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:18.183	26	[71%] Posting snapshot commands into the distribution database	0	0	0	0	0x0000000000000820
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:17.730	25	[71%] Processing system pre-snapshot script	0	0	0	0	0x000000000000081F
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:16.353	24	[39%] Generating schema scripts for article 'SubTable'	0	0	0	0	0x000000000000081E
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.653	19	[6%] Generating schema scripts for article 'MainTable'	0	0	0	0	0x00000000000008
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.640	19	[6%] Analyzing dependencies on non-article objects	0	0	0	0	0x000000000000081C
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.633	19	[6%] Analyzing external references of all replicated check and default constraints	0	0	0	0	0x000000000000081B
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.550	19	[6%] Analyzing foreign key references among article objects in the publication	0	0	0	0	0x000000000000081A
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.533	19	[6%] Resolving duplicate object names among replicated objects	0	0	0	0	0x0000000000000819
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.523	19	[6%] Customizing object for scripting based on article 'SubTable'	0	0	0	0	0x0000000000000818
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.450	19	[6%] Customizing object for scripting based on article 'MainTable'	0	0	0	0	0x00000000000000817
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:11.387	19	[6%] Sorting article objects in the proper creation order	0	0	0	0	0x0000000000000816
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.767	15	[6%] Pre-loading meta-data of all tables in the publisher database for scripting	0	0	0	0	0x00000000000000815
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.433	1	[0%] Bulk copied snapshot data for article 'MainTable' (2 rows).	0	2	2	0	0x00000000000000814
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.427	1	[0%] Bulk copied snapshot data for article 'SubTable' (1 rows).	0	1	1	0	0x00000000000000813
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.347	15	[0%] Bulk copying snapshot data for article 'SubTable'	0	0	0	0	0x00000000000000812
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.340	15	[0%] Bulk copying snapshot data for article 'MainTable'	0	0	0	0	0x00000000000000811
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.187	15	[0%] Locking published tables while generating the snapshot	0	0	0	0	0x00000000000000810
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.167	15	[0%] Activating the object '[dbo].[SubTable]' for replication	0	0	0	0	0x000000000000080F
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.130	15	[0%] Activating the object '[dbo].[MainTable]' for replication	0	0	0	0	0x000000000000080E
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.020	15	[0%] Updating statistics on index 'dbo.MainTable(PK_MainTabl_3214EC27F669712F)'	0	0	0	0	0x00000000000008
1	3	2022-12-09 08:41:52.033	2022-12-09 08:42:07.013	15	[0%] Updating statistics on index 'dbo.SubTable(PK_SubTable_3214EC27CE1FD4DD)'	0	0	0	0	0x00000000000000000
1	3	2022-12-09 08:41:52.033	2022-12-09 08:41:52.520	0	Retrieving publication and article information from the publisher database 'MIHLI.8F08E6D34D3B	0	0	0	0	0x0000000000000000A
1	3	2022-12-09 08:41:52.033	2022-12-09 08:41:52.517	0	Publisher database compatibility level is set to 150.	0	0	0	0	0x00000000000000000
1	3	2022-12-09 08:41:52.033	2022-12-09 08:41:52.510	0	Connecting to Publisher 'MIHLI.8F08E6D34D3B.DATABASE.WINDOWS.NET'	0	0	0	0	0×0000000000000808
1	3	2022-12-09 08:41:52.033	2022-12-09 08:41:52.503	0	Connecting to Azure Files Storage "\hlirepIsnapshots.file.core.windows.net\snapshots"	0	0	0	0	0x0000000000000000000
1	3	2022-12-09 08:41:52.033	2022-12-09 08:41:52.493	0	Obtained Azure Storage Connection String for hlirepIsnapshots	0	0	0	0	0x00000000000000806
1	3	2022-12-09 08:41:52.033	2022-12-09 08:41:52.487	0	Connecting to Distributor 'MIHLI.8F08E6D34D3B.DATABASE.WINDOWS.NET'	0	0	0	0	0x00000000000000805
1	1	2022-12-09 08:41:52.033	2022-12-09 08:41:52.033	0	Initializing	0	0	0	0	0x00000000000000804
1	1	2022-12-09 08:41:49.573	2022-12-09 08:41:49.573	0	Starting agent.	0	0	0	0	0x000000000000000803

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