

# Gateway reset connections idle for 30m

Last updated by | Holger Linke | Mar 1, 2023 at 4:39 AM PST

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

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## Issue

Azure SQL Databases are deployed in multi-tenant clusters. To keep the resource consumption low, idle session are killed by the Azure gateway to cleanup the connections which have been idle for 30 minutes. This connection reset occurs when the client is using proxy connection policy instead of redirect. Redirect connections bypass the gateway and its proxy, and the gateway is not managing the connection lifetime then.

Clients are able to reconnect after a connection reset if they have enabled the retry feature:

- For ODBC, it is controlled through the ODBC connection string keywords `ConnectRetryCount` and `ConnectRetryInterval`. See [Connection Resiliency in the Windows ODBC Driver](#)  for further details and a code example.
- For JDBC, it is controlled through the connection options `connectRetryCount` and `connectRetryInterval`. See [Connection resiliency \(JDBC\)](#)  for further details.

## Investigation / Analysis

### Telemetry

ASC will provide you with information about idle connection reset on page "Connectivity -> Disconnects".

In the `MonLogin` Kusto table, the idle connection reset is logged as "idle\_session\_execution\_stats" event:

```
let srv = "servername";
let startTime = datetime(2023-02-15 04:00:00Z);
let endTime = datetime(2023-02-16 05:00:00Z);
let timeRange = ago(1d);
MonLogin
| where TIMESTAMP >= startTime
| where TIMESTAMP <= endTime
//| where TIMESTAMP >= timeRange
| where LogicalServerName contains srv
| where event == "idle_session_execution_stats"
| project TIMESTAMP, LogicalServerName, package, event, killed, remaining, remaining_dac_connections
| limit 1000
```

Sample output:

TIMESTAMP	LogicalServerName	package	event	killed	remaining
2023-02-15 04:01:37.4129542	servername	sqlserver	idle_session_execution_stats	15	665
2023-02-15 04:02:37.4126643	servername	sqlserver	idle_session_execution_stats	11	674
2023-02-15 04:03:37.4280076	servername	sqlserver	idle_session_execution_stats	10	677
2023-02-15 04:04:37.3964649	servername	sqlserver	idle_session_execution_stats	16	670
2023-02-15 04:05:37.3961980	servername	sqlserver	idle_session_execution_stats	13	665

Network Trace

If you capture a network trace on the client side, you'll see that the server/gateway sends a **RST** reset packet to the client after exchanging only TCP KeepAlive packets for some time:


Frame Summary - [Conversation Filter], tcp.Port== 1433 and ipv4.Address== 10.240.64.133

Find	Frame Number	Time Date Local Adjusted	Time Offset	UT Process Name	Source	Destination	Protocol Name	Description
	141182	5:11:57 PM 2/3/2021	1487.0022162	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	141183	5:11:57 PM 2/3/2021	1487.0022307	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	141184	5:11:57 PM 2/3/2021	1487.0355259	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	141185	5:11:57 PM 2/3/2021	1487.0351618	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	170089	5:12:27 PM 2/3/2021	1517.0184168	(0)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	170090	5:12:27 PM 2/3/2021	1517.0184519	(0)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	170091	5:12:27 PM 2/3/2021	1517.0511733	(0)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	170092	5:12:27 PM 2/3/2021	1517.0516911	(0)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	200688	5:12:57 PM 2/3/2021	1547.0188204	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	200689	5:12:57 PM 2/3/2021	1547.0188492	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	202550	5:12:57 PM 2/3/2021	1547.0533848	(0)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	202551	5:12:57 PM 2/3/2021	1547.0539993	(0)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	234143	5:13:27 PM 2/3/2021	1577.0349487	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	234144	5:13:27 PM 2/3/2021	1577.0349731	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	234145	5:13:27 PM 2/3/2021	1577.0690026	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	234146	5:13:27 PM 2/3/2021	1577.0696701	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	262356	5:13:57 PM 2/3/2021	1607.0511931	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821593 - 3837821594, Ack=135...
	262357	5:13:57 PM 2/3/2021	1607.0512105	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662130, Ac...
	263380	5:13:57 PM 2/3/2021	1607.2563304	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	263381	5:13:57 PM 2/3/2021	1607.2571067	(0)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	287711	5:14:27 PM 2/3/2021	1637.0675116	(3068)	Client	Server	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	287712	5:14:27 PM 2/3/2021	1637.0675773	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	287864	5:14:27 PM 2/3/2021	1637.3045429	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662130, Ac...
	287866	5:14:27 PM 2/3/2021	1637.3049046	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	315244	5:14:57 PM 2/3/2021	1667.0834314	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	315245	5:14:57 PM 2/3/2021	1667.0834560	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	315264	5:14:58 PM 2/3/2021	1667.3202234	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	315266	5:14:58 PM 2/3/2021	1667.3207512	(1868)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	339847	5:15:27 PM 2/3/2021	1697.0996245	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	339848	5:15:27 PM 2/3/2021	1697.0996310	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	339849	5:15:28 PM 2/3/2021	1697.4195400	(0)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	339850	5:15:28 PM 2/3/2021	1697.4204142	(3068)	Client	Server	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	363278	5:15:57 PM 2/3/2021	1727.1002634	(4)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	363279	5:15:57 PM 2/3/2021	1727.1002993	(4)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	363361	5:15:58 PM 2/3/2021	1727.4195358	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662130, Ac...
	363362	5:15:58 PM 2/3/2021	1727.4202753	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	393474	5:16:27 PM 2/3/2021	1757.1006284	(0)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	393475	5:16:27 PM 2/3/2021	1757.1006418	(0)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	395938	5:16:28 PM 2/3/2021	1757.4195237	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	395939	5:16:28 PM 2/3/2021	1757.4203715	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	423349	5:16:57 PM 2/3/2021	1787.1012194	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	423350	5:16:57 PM 2/3/2021	1787.1012470	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	423364	5:16:58 PM 2/3/2021	1787.4351649	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	423365	5:16:58 PM 2/3/2021	1787.4356856	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	452636	5:17:27 PM 2/3/2021	1817.1018231	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=1, Seq=3837821593 - 3837821594, Ack=135...
	452637	5:17:27 PM 2/3/2021	1817.1018508	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=0, Seq=1355662130, Ac...
	454298	5:17:28 PM 2/3/2021	1817.4539174	(3068)	Client	Server	TCP	TCP:[Keep alive] [Bad CheckSum]Flags=...A..., SrcPort=53711, DstPort=1433, PayloadLen=1, Seq=1355662129 - 1355...
	454299	5:17:28 PM 2/3/2021	1817.4545691	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...
	460205	5:17:34 PM 2/3/2021	1823.8091210	(3068)	Server	Client	TCP	TCP:[Keep alive]Flags=...A..., SrcPort=1433, DstPort=53711, PayloadLen=0, Seq=3837821594, Ack=135...

Mitigation



One way to avoid idle connection connection resets would be switching the connection policy from "proxy" to "redirect". The customer can check the current setting and change to redirect through the Azure portal, PowerShell, or Azure CLI. See [Change the connection policy](#) for the steps.

[Connection policy](#) lists some prerequisites and limitations for using redirect:

- Clients need to allow outbound communication from the client to all Azure SQL IP addresses in the region on ports in the range of 11000 to 11999. Use the Service Tags for SQL to make this easier to manage.
- Clients need to allow outbound communication from the client to Azure SQL Database gateway IP addresses on port 1433.
- If the client is an Azure Virtual Machine, you can accomplish this using Network Security Groups (NSG) with [service tags](#) .
- If the client is connecting from a workstation on-premises then you may need to work with the customer's network admin to allow network traffic through your corporate firewall.
- Connections to private endpoint only support Proxy as the connection policy.

If the customer is using Private Endpoint connections, switching to redirect is not possible though, due to the limitation that private endpoints only support proxy connections currently. In this case, they can avoid the idle reset issue by sending dummy queries to server periodically, e.g. a `SELECT 1` query every 5 - 10 minutes.

## Public Doc Reference

- [Connection Resiliency in the Windows ODBC Driver](#) 
- [Microsoft ODBC Driver for SQL Server](#) 

These articles apply to all platform environments: Linux, Mac, Windows.

### How good have you found this content?

