Gateway Upgrades

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Gateway Upgrades

Tuesday, June 25, 2019
10:50 AM

Who is this change impacting?

All Azure SQL Database (singleton-all SLOs, pools, DW) servers that rely on Gateway(CRs)

What is changing? <INTERNAL ONLY>

Gen3 machines are being decommissioned across Azure and being replaced with Gen5 hardware which has much better hardware specs. As part of this we need to replace Gen3 CRs w

How will the change be communicated to customers?

1. Update our IP address list with all the addresses available in each region.
2. Update release notes with why we are decommissioning the primary IP address and mitigation steps.
3. CXP shall email and portal toast customers by subscription ~~/region.~~

All these actions were done by 10/1/2019 and our aim is to start migration for external customers the week of 10/14

Who will be impacted? i.e. what types of support cases to expect & their mitigation ?

This change will not impact any in-flight transactions or availability for your database. We shall gradually move traffic away from decommissioned Gateway to one of the other Gateway without impacting any existing connections that may still be using the decommissioned gateway. Any new connections will be serviced by one of the other Gateways.

Errors customer may receive post migration -

Error #1

For example, if customer has firewall rules on-premises that depend on IP address of a specific Gateway or if customer is using a custom DNS server that resolves to a specific Gat this error message to be returned when a connection is attempted.

"A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name SQL Server is configured to allow remote connections."

Mitigation for Error#1:-

We recommend that you allow outbound traffic to IP addresses for all the Azure SQL Database gateway IP addresses in the region on TCP port 1433, and port range 1100 firewall device. For more information on port ranges, see Connection policy.

What to do if mitigation does not work?

Allow_listing all IP addresses per our docs shall take care of Expected Error #1 . If that still does not work, engage Azure Networking team to look at why traffic may not be reach

Error #2

For customer using Microsoft JDBC driver lesser than V4.0, they can expect the following error
"A connection was successfully established with the server, but then an error occurred during the pre-login handshake. (provider: SSL Provider, error: 0 - The certificate's CN nam passed value.)"

Mitigation for Error #2 :- Ensure that the hostNameInCertificate property is set to *.database.windows.net. For more information on how to set the hostNameInCertificate prop with SSL Encryption.

Run the Kusto Query <HERE> to confirm driver version in use.

(This should be a minority i.e. we only saw one customer when we did this in Australia data center. For this error confirm which version of JDBC the customer is using and suggest t latest version or implement the mitigation. If neither works then open an ICM with the Gateway team.)

How to check Control Ring / Gateway IP/ Connectivity

<INTERNAL ONLY> - The goal of this migration is to decommission the Gen-3 hardware and migrate the traffic to new gen-5 hardware. The gateway nodes in CR1 are the or hardware and post migration this will change. You can do NsLookup on customer's server to confirm the CR location .

Using NSLookup.exe (To find the control ring and Gateway IP)

```
C:\Users\subbuk>nslookup seahawks.database.windows.net
Server:  DNSV6Anycast1.corp.microsoft.com
Address:  2001:4898::1050:1050

Non-authoritative answer:
Name:    cr2.centralus1-a.control.database.windows.net
Address:  13.67.215.62
Aliases:  seahawks.database.windows.net
          dataslice2.centralus.database.windows.net
```

Using PSPing.exe (Check GW IP you are connecting to and successful connections)

Post migration, this may fail for customer if they hardcode old (gen-3) Gateway IP's on the client FW rule. Mitigation is to update their FW rule with new.

C:\pstools>psping seahawks.database.windows.net:1433

PsPing v2.10 - PsPing - ping, latency, bandwidth measurement utility
Copyright (C) 2012-2016 Mark Russinovich
Sysinternals - www.sysinternals.com

TCP connect to 13.67.215.62:1433:
5 iterations (warmup 1) ping test:
Connecting to 13.67.215.62:1433 (warmup): from 172.30.172.127:1778: 42.50ms
Connecting to 13.67.215.62:1433: from 172.30.172.127:1779: 43.55ms
Connecting to 13.67.215.62:1433: from 172.30.172.127:1780: 42.71ms
Connecting to 13.67.215.62:1433: from 172.30.172.127:1782: 42.90ms
Connecting to 13.67.215.62:1433: from 172.30.172.127:1783: 42.94ms

Variation of the above problem statement:-
CVS has multiple Prod and Dev environments in each region. How can they confirm that all IP addresses are reachable from their clients?
I suggested that they can do Psping to all the IP addresses in a region like this

```
psping 104.42.238.205:1433

PsPing v2.10 - PsPing - ping, latency, bandwidth measurement utility
Copyright (C) 2012-2016 Mark Russinovich
Sysinternals - www.sysinternals.com

TCP connect to 104.42.238.205:1433:
5 iterations (warmup 1) ping test:
Connecting to 104.42.238.205:1433 (warmup): from 100.64.135.245:58330: 61.21ms
Connecting to 104.42.238.205:1433: from 100.64.135.245:58331: 32.16ms
```

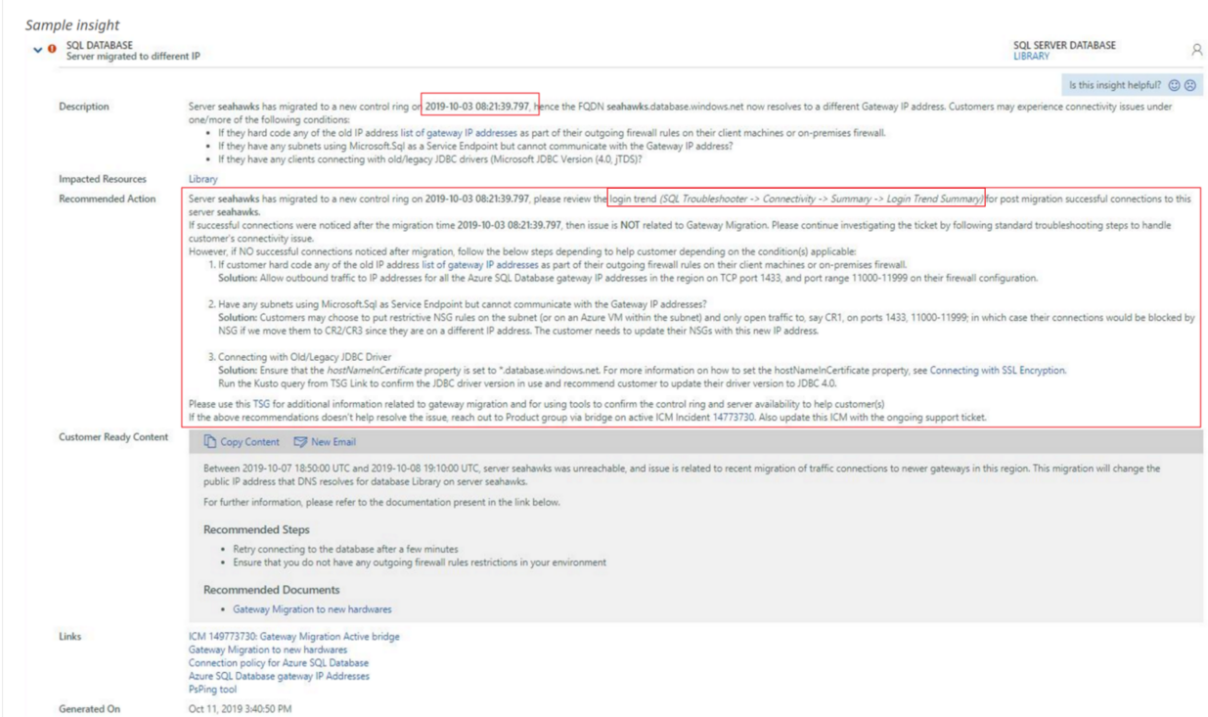
Azure SQL DB Connectivity Checker tool

In addition, please use the connectivity check tool Azure SQL DB Connectivity Checker to test connectivity to all the SQL DB gateways existing on the region where th located.

ASC Insight - (Pending Prod)

(ASC diagnostics will match customer subscription/resource (server) to confirm and generate the insight ONLY for the impacted customer's resource.)

Step 1 : Check if ASC generated insight for this customer resource. If GW migration insight not generated for this resource, then the issue is not related to GW Migration.



Step 2 : If insight generated for customer's resource, follow the Recommended Action to assist customer.

Ensure to check Migrated timestamp and review post migration login trend for customer resource. (SQL Troubleshooter -> Connectivity-> Summary -> Login Trend graph). connection noticed after migration, then the issue is not related to GW migration.

OR

If for some reason, troubleshooter is slow or not able to get the login trend from connectivity please use the kusto query to check the login trend.

```
MonLogin
| where logical_server_name =~ {ServerName}  and database_name =~ "DatabaseName"
| where TIMESTAMP >= (use the migrated_datetime - from the ASC Insight)
| extend logical_server_name = tolower(logical_server_name), database_name = tolower(database_name)
| where event=="process_login_finish"
| summarize sum_nb_connection_accept_finish= sum(iff(is_success == 1 and (package=="sqlserver" or package=="mpdw"), 1 , 0))
,sum_nb_connection_accept_only = toint(0)
,sum_nb_connection_accept_failure = toint(0)
,sum_nb_connection_accept_failure_finish = sum(iff(is_success == 0 and is_user_error == 1, 1 , 0))
,sum_nb_connection_accept_failure_finish_is_system_error = sum(iff(is_success == 0 and is_user_error == 0, 1 , 0))
by TIMESTAMP, logical_server_name, database_name //bin = 60
| extend total_succeed = sum_nb_connection_accept_finish
| extend total_failures_system_error = sum_nb_connection_accept_only + sum_nb_connection_accept_failure + sum_nb_connection_accept_failure_finish_is_system_err
| extend total_failures_user_error = sum_nb_connection_accept_failure_finish
| extend total_logins = total_succeed + total_failures_system_error + total_failures_user_error
| project TIMESTAMP,
['Total Logins']=total_logins,
['Failed Logins Due to System Error']=total_failures_system_error,
['Failed Logins Due to User Error']=total_failures_user_error
| sort by TIMESTAMP asc
| render timechart
//QueryName:'Login Trend'
```

Step 3: Depending on customers scenario listed in CSS Ready content follow the recommendations to help customer.

In addition, make use of NSLookup and PSPing tools to confirm the CR location GW IP and Connectivity for customer.

How good have you found this content?