Performance of copy activity with Service Now connector with Delta load and Full load

Last updated by | Veena Pachauri | Mar 8, 2023 at 11:57 PM PST

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Issue

Performance of copy activity with Service Now connector with Delta load and Full load

Symptoms

1. User was using ADF service now connector to do delta load and they were using display schema in it, which caused the delay also it is confirmed in our Local doc: https://docs.microsoft.com/en-us/azure/data-factory/connector-servicenow#performance-tips
2. User mentioned the performance varies among different running.

Investigation

1. User seeing drastic difference in throughput of copy activity (ServiceNow to Azure SQL DB) when its ran on Azure IR.

2. Suggested to user use SHIR instead of Azure IR. But even with this workaround the user still has Intermittent issues with the pipeline. so collected ODBC logs and SHIR logs

3. Provided logs to SIMBA team. with adding "EnableURLLog = true" to in linked service properties

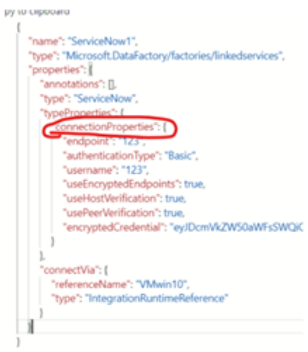
4. From ICM, ADF product team provided below info about ServiceNow connector Performance and throughput

    - 100+kb/s is a reasonable perf given it is already on the top level among all our customers using ServiceNow.

    - User mainly complaining that when reading from some certain tables, the perf drop down to ~10kb/s, which is much worse than other table and sometimes may cause timeout issue.

    - So CSS followed up with below items need to consider:

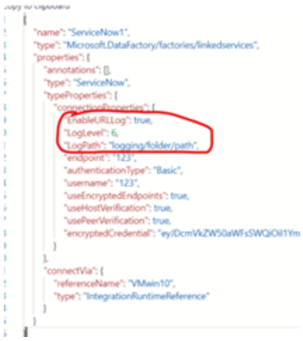
        - Simba team and ServiceNow team have to do more investigation on "why the perf is much worse (10kb/s) for these tables than others", other than "why the overall perf is bad (100+kb/s)".
        - For temporarily workaround, here're two ways: Both needs SHIR
        - Option1: ODBC connector+ServiceNow's driver
        - Option2: ServiceNow connector+Simba's beta driver.
        - It depends on customer to decide which way they will take; Option 1 is preferred because Simba's beta driver has an issue that it cannot do full load from large table.
        - If user wants to go with SHIR, below guidance has to provide to user to follow steps to enable logging to see fiddler packets which are needed to Simba team
        - Click the button to edit ServiceNow linked service.
            - Add a new property named “connectionProperties” under “typeProperties”, and move all other properties into “connectionProperties”.



```
{
    "name": "ServiceNow1",
    "type": "Microsoft.DataFactory/factories/linkedservices",
    "properties": {
        "annotations": [],
        "type": "ServiceNow",
        "typeProperties": {
            "connectionProperties": {
                "endpoint": "123",
                "authenticationType": "Basic",
                "username": "123",
                "useEncryptedEndpoints": true,
                "useHostVerification": true,
                "usePeerVerification": true,
                "encryptedCredential": "eyJDcmVkZW50aWFsSWQiC
            }
        },
        "connectVia": {
            "referenceName": "VMwin10",
            "type": "IntegrationRuntimeReference"
        }
    }
}
```

- Add below new properties into “connectionProperties”:

  “EnableURLLog”: true
  “LogLevel”: 6
  “LogPath”: “logging/folder/path”

  ```
  {
      "name": "ServiceNow1",
      "type": "Microsoft.DataFactory/factories/linkedservices",
      "properties": {
          "annotations": [],
          "type": "ServiceNow",
          "typeProperties": {
              "connectionProperties": {
                  "EnableURLLog": true,
                  "LogLevel": 6,
                  "LogPath": "logging/folder/path",
                  "endpoint": "123",
                  "authenticationType": "Basic",
                  "username": "123",
                  "useEncryptedEndpoints": true,
                  "useHostVerification": true,
                  "usePeerVerification": true,
                  "encryptedCredential": "eyJDcmVkZW50aWFsSWQiOiI1Ym
              }
          },
          "connectVia": {
              "referenceName": "VMwin10",
              "type": "IntegrationRuntimeReference"
          }
      }
  }
  ```

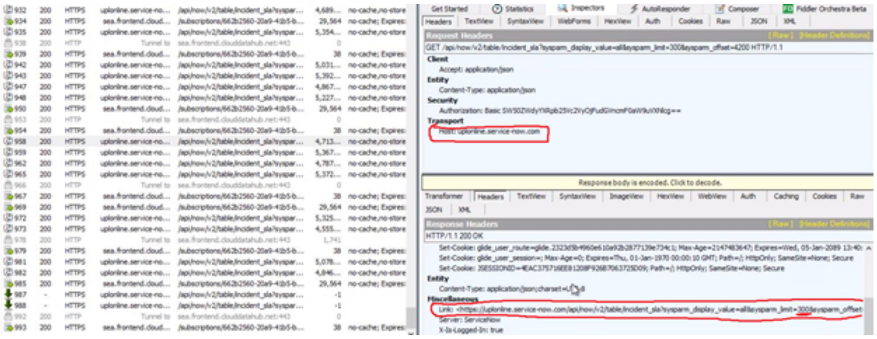
  Note that it is better to set log path to D:\ disk other than C:\ because driver may not have access to write file to C:\ disk. And please manually create the logging folder at first.

- Save and publish the linked service. Trigger another copy job to collect logs.

5. With the above JSON definition, you can collect logs of fiddler traces.

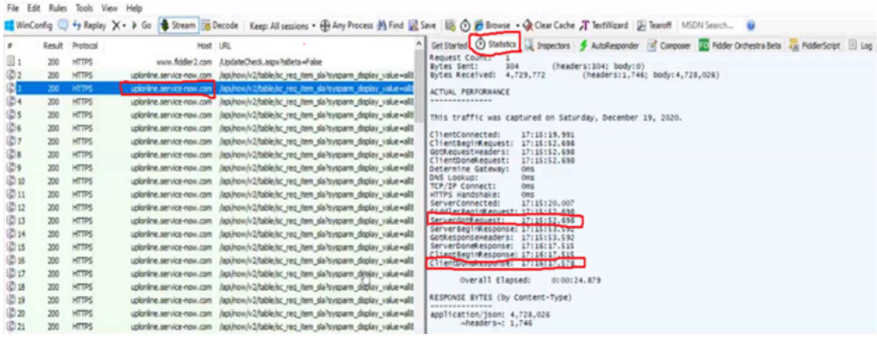
6. After collecting fiddler logs from user, provide to SIMBA team. After fiddler log analysis, Driver team mentioned that there was delay in response from ServiceNow up to 30 seconds. Which usually need to be 1 second. This might be a network delay reaching to service now and getting back the response. But it is very high.

7. Driver team and CSS, analysed collected fiddler packets to find out the delay by taking a difference of "ServerGotRequest" and "ClientDoneResponse" from the statistics tab.



```
GET /api/now/v2/table/incident_sla?sysparm_display_value=all&sysparm_limit=300&sysparm_offset=4200 HTTP/1.1
Client
    Accept: application/json
Entity
    Content-Type: application/json
Security
    Authorization: Basic SW50ZWdyYXRpb25Vc2VyOjFudGVncmF0aW9uVXNlcg==
Transport
    Host: uplonline.service-now.com
```

```
HTTP/1.1 200 OK
    Set-Cookie: glide_user_route=glide.2323d5b4960e610a92b2877139e734c1; Max-Age=2147483647; Expires=Wed, 05-Jan-2089 13:40:
    Set-Cookie: glide_user_session=; Max-Age=0; Expires=Thu, 01-Jan-1970 00:00:10 GMT; Path=/; HttpOnly; SameSite=None; Secure
    Set-Cookie: JSESSIONID=4EAC3757168EE81208F92687063725D09; Path=/; HttpOnly; SameSite=None; Secure
Entity
    Content-Type: application/json;charset=UTF-8
Miscellaneous
    Link: <https://uplonline.service-now.com/api/now/v2/table/incident_sla?sysparm_display_value=all&sysparm_limit=300&sysparm_offset
    Server: ServiceNow
    X-Is-Logged-In: true
```



```
Request Count:   1
Bytes Sent:      304         (headers:304; body:0)
Bytes Received:  4,729,772        (headers:1,746; body:4,728,026)

ACTUAL PERFORMANCE
--------------

This traffic was captured on Saturday, December 19, 2020.

ClientConnected:     17:15:19.991
ClientBeginRequest:  17:15:52.698
GotRequestHeaders:   17:15:52.698
ClientDoneRequest:   17:15:52.698
Determine Gateway:   0ms
DNS Lookup:          0ms
TCP/IP Connect:      0ms
HTTPS Handshake:     0ms
ServerConnected:     17:15:20.007
FiddlerBeginRequest: 17:15:52.698
ServerGotRequest:    17:15:52.698
ServerBeginResponse: 17:15:53.592
GotResponseHeaders:  17:15:53.592
ServerDoneResponse:  17:16:17.515
ClientBeginResponse: 17:16:17.515
ClientDoneResponse:  17:16:17.578

       Overall Elapsed:     0:00:24.879

RESPONSE BYTES (by Content-Type)
--------------
application/json: 4,728,026
       ~headers~: 1,746
```

- Viewing at the statistics of all the fiddler requests the minimum time was around 24sec and maximum time was around 31sec. So on an avg there was delay of around 27sec.

- The last request send was with offset 72300, which took around 1hr 48m. The link header shows offset to be 300000 which on calculation will take around 10hr+ to complete. The complete details of all the 1000 requests have to be there but only 242 were captured and shared.

  URL: https://uplonline.service-now.com/api/now/v2/table/sc_req_item_sla?sysparm_display_value=all&sysparm_limit=300&sysparm_offset=300000 >;rel="last"

- We can still see; Service Now server is taking a lot of time to respond back 28 secs for 300 rows is quite large. Driver is dependent upon Service Now Server response directly. Requested to customer to work with Service Now team, to look and fix why Service Now is taking so much time to respond back

- With Service Now connector in Azure data factory, 1 second of delay would mean 20 minutes over all time. Driver team calculated during live debugging session using 18 secs as average and the time came around 5 hours for reading around 280000 rows. So with 10 secs on avg delay we have 200 minutes (3+ hours) and also number of rows has increased to 300000. So our explanation of driver performance still stands the same, that driver is directly dependent upon Service Now performance.

Conclusion

We have arrived to a conclusion that delay issue is on SNOW side and ServiceNow team engineer joined and confirmed, that their side also it is taking 36 seconds of durations (i.e. pull request, count records and query execution) for full load operations too.

1. ADF Native Connector: The display schema which we are using fetch entire table records and then apply the filter, this is by design and in order for filter to work we will have to apply the actual schema also it was confirmed by Driver team. By default, Currently ServiceNow connector uses driver 1.6.4 version in ADF

2. Service Now ODBC Connector: This is known issue that the connector has limit of 10,000 records and cannot be increased. SNOW team will help cx in tuning queries also if limits can be increased or not

3. Performance Issue: The Explanation given is as below

    - There are two ways to pull the full load 1. By Actual table (ID Values only) 2. By Display table
    - User using the display table for pulling in the details in our current architecture.
    - The time taken to fetch 1 single set of 300 records is min from 27 to max 34 secs which is reason for causing the delay. Both the teams have confirmed that approx. 3 lakh records in a table are considered to be “huge”; also considering the latency and record count this will be taking approx. 6 to 9 hrs.

MS Team and Snow Product Team have suggested us to reduce either the no of column which we are pulling or to reduce the size of the data

- Reduce the size of data: This is not possible as this is full load and even if we try this with query mode this will fetch the entire records from the table and then apply the filter.

```
- For Full load (ADF Native Connector) we cannot apply the filters and Delta Load (SNOW ODBC Connector) has limit of 10,000 records. Right now we are in a fix
```

To continue the data load effectively we will have to consider with both Azure IR (Full Load) and SHIR Service Now ODBC Connector(Delta Load), this will have commercial implication as well.

Additional Information:

SD Link ICM Link Simba ticket

TSG followed: https://supportability.visualstudio.com/AzureDataFactory/_wiki/wikis/AzureDataFactory/286830/-build-in-ODBC-Driver-related-driver-log

https://supportability.visualstudio.com/AzureDataFactory/_wiki/wikis/AzureDataFactory/290043/Capture-Fiddler-Logs (But didn’t work)

- **Author:** v-pavred, v-vitred
- **Reviewer:** vimals
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