

# Identify and troubleshoot OOM ( Out of Memory ) errors in SHIR

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## Issue

Customers see the error "**ErrorCode=UserErrorOutOfMemory,'Type=Microsoft.DataTransfer.Common.Shared.HybridDeliveryException,Message=Runtime get failed because the memory usage of self-hosted integration runtime machine is too high'**" when running jobs using SHIR

## Cause

As the error describes, this is due to the high usage of memory in SHIR machine

## Troubleshooting steps

Heartbeats

```
| where TIMESTAMP between (datetime(2022-04-14 11:50:00)..datetime(2022-04-14 20:30:00))
| where AgentGroupName == 'SHIRName' //and AgentInstanceId contains "xxxxxx"
//| where SubscriptionId =~ 'xxxxx'
| extend TotalMemory = tolong(extract("\TotalMemory\": (\d+)", 1, Telemetries))
| extend AvailableMemory = tolong(extract("\AvaliableMemory\": (\d+)", 1, Telemetries))
| extend CpuUtilization = tolong(extract("\CpuUtilization\": (\d+)", 1, Telemetries))
| extend MaxCapacity = tolong(extract("\MaxCapacity\": (\d+)", 1, Telemetries))
| extend UsedCapacity = tolong(extract("\UsedCapacity\": (\d+)", 1, Telemetries))
| extend queueLength=tolong(extract("\QueueLength\": (\d+)",1,Telemetries))
| extend CommittedBytesInUseRatio=todouble(CommittedBytesInUseRatio=parse_json(Telemetries)["CommittedBytesInUseRatio"])
| project TIMESTAMP, AgentGroupId, AgentInstanceId,IsUpgradeGranted, MemoryUtilization = (TotalMemory-AvailableMemory)*100/TotalMemory, CpuUtilization, Jo
```

Along with looking into AvailableMemory and TotalMemory, we also need to check "CommittedBytesInUseRatio" which is how much did the Virtual machine asked the machine and how much did it actually use. So using this metric would accurately show us the total memory which Customer's VM has been using.

Below image shows CommittedBytesInUseRatio from the above query and it can be seen that available memory shows 1-2 GB of Memory while CommittedBytesInUseRatio is already hitting 100% during time of the issue

| TIMESTAMP                   | IsUpgradeGranted | MemoryUtilization | CpuUtilization | JobCapacity | TotalMemory | AvailableMemory | CommittedBytesInUseRatio |
|-----------------------------|------------------|-------------------|----------------|-------------|-------------|-----------------|--------------------------|
| 2022-04-14 19:55:41.5569078 | 0                | 76                | 31             | 0           | 16383       | 3784            | 89                       |
| 2022-04-14 19:56:14.6787342 | 0                | 76                | 0              | 0           | 16383       | 3896            | 89                       |
| 2022-04-14 19:56:47.6492005 | 0                | 76                | 7              | 0           | 16383       | 3896            | 89                       |
| 2022-04-14 19:57:18.3157051 | 0                | 76                | 3              | 0           | 16383       | 3897            | 89                       |
| 2022-04-14 19:57:44.2898147 | 0                | 77                | 38             | 0           | 16383       | 3659            | 90                       |
| 2022-04-14 19:58:18.1182115 | 0                | 76                | 26             | 0           | 16383       | 3895            | 89                       |
| 2022-04-14 19:58:47.2946787 | 0                | 76                | 3              | 0           | 16383       | 3894            | 89                       |
| 2022-04-14 19:59:19.0060782 | 0                | 76                | 0              | 0           | 16383       | 3896            | 89                       |
| 2022-04-14 19:59:49.7283464 | 0                | 76                | 0              | 0           | 16383       | 3898            | 89                       |
| 2022-04-14 20:00:16.8057900 | 0                | 76                | 0              | 0           | 16383       | 3905            | 89                       |
| 2022-04-14 20:00:42.3054808 | 0                | 76                | 0              | 57          | 16383       | 3902            | 89                       |
| 2022-04-14 20:01:09.0185295 | 0                | 76                | 38             | 85          | 16383       | 3909            | 90                       |
| 2022-04-14 20:01:39.8738977 | 0                | 77                | 0              | 71          | 16383       | 3636            | 93                       |
| 2022-04-14 20:02:11.6450724 | 0                | 79                | 0              | 50          | 16383       | 3410            | 95                       |
| 2022-04-14 20:02:39.0610152 | 0                | 80                | 27             | 78          | 16383       | 3192            | 100                      |
| 2022-04-14 20:03:11.1146587 | 0                | 85                | 46             | 28          | 16383       | 2449            | 97                       |
| 2022-04-14 20:03:42.3012651 | 0                | 87                | 19             | 14          | 16383       | 2101            | 98                       |
| 2022-04-14 20:04:10.8794745 | 0                | 87                | 23             | 50          | 16383       | 2019            | 98                       |
| 2022-04-14 20:04:36.5513314 | 0                | 86                | 19             | 53          | 16383       | 2187            | 100                      |
| 2022-04-14 20:05:06.7070637 | 0                | 90                | 46             | 57          | 16383       | 1534            | 100                      |
| 2022-04-14 20:05:38.8181398 | 0                | 88                | 50             | 16          | 16383       | 1876            | 98                       |
| 2022-04-14 20:06:12.1959280 | 0                | 85                | 11             | 14          | 16383       | 2326            | 98                       |