Slow running pipelines with control flow activities like foreach, if, switch, until etc

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Issue

Customer complains that control flow activities like foreach, if, switch, until etc are running for a longer period of time, even though the inner activities like Copy or Get Metadata are running within the expected timeframe, activities like foreach and if are taking more time. for Eg: a pipeline which has an if condition might have only one copy activity, copy activity will finish in 2 minutes but the total time taken by pipeline is 3-4 minutes, so Customer might have a question why is the if condition activity taking extra 1-2 minute to execute.

Cause

ADF is a batch service, not a streaming service. There are several steps involved in executing an ADF activity. The REST protocol does not guarantee an execution time across requests. When you consider all the steps to execute an activity, then there's some extra time besides the execution that will be in place for every activity

Resolution

We need to check how many such runs of Customer has been running slowly. Since ADF guarantee 99.9% SLA of 4 minutes, use the below query to understand how many such runs have the issue which Customer is mentioning.

```
cluster('adfcus.kusto.windows.net').database('AzureDataFactory').ActivityRuns
| union cluster('adfneu.kusto.windows.net').database('AzureDataFactory').ActivityRuns
| where dataFactoryName == "<ADF name>"
| where pipelineName == "<pipeline name>"
| order by pipelineRunId, TIMESTAMP asc
| serialize prevTime = prev(TIMESTAMP), prevType = prev(activityType)
| where activityType == "ForEach" // or any other activity in question
| where status == "Succeeded"
| extend dif = TIMESTAMP - prevTime
| project TIMESTAMP, pipelineName, activityName, activityType, pipelineRunId, activityRunId, status, dataFacto
| order by dif desc
| where dif > time(00:04:00.00000) // greater than SLA of 4 minutes
```

Also check count of number of the pipelines for past 21 days, divide the above count from the query by total number of pipelines (multiply by 100) which would give the SLA. if the 99.9% SLA is not met, engage Orch PG in

the Ava to further troubleshoot the issue. If there are 1000 total pipeline runs and only 2-3 of them have issue which Customer is mentioning, then it would be not worth to spend time and effort in understanding the latency due to the reason mentioned in the **Cause** section