Dmaap adapter
Current Observations with Dmaap Adapter Scalability

- When multiple replicas of DmaapAdapter are created they register with ICS with same jobCallbackUrl, producerSupervisionCallbackUrl. Due to this, when a new job is created, ICS sends job creation messages to the dmaapAdapter, and the Kubernetes service, acting as a load balancer, distributes the calls to multiple replicas of the dmaapAdapter. This causes inconsistency of Job information in different replicas of dmaapAdapter. Some jobs may get created in dmaapAdapter-0 and some may be created in dmaapAdapter-1.

- Similarly, due to data inconsistencies ICS may send job deletion message to instance of dmaapAdapter which may not have job information.

- There is no common repository or DB where the job information is shared across dmaapAdapters.

- In H-release, with the support of PM data PM files are stored in volumes. Currently DmaapAdapter is designed as a stateful deployment. So, the PM files may not be shared across all the replicas of DmaapAdapter.

- Once error is encountered, Data consumer stops without retrying.
Dmaap-Adapter Scalability Solutions

- Use Database to store job information.
- Sync Job Information between replicas (implementing DB trigger could be an option)
Queries on DmaapAdapter/PMProducer

- What is the purpose of jobgroup in code
- Why is Dmaap-Adapter having a Stateful-set chart when Dmaap-Adapter is stateless
When multiple replicas of DmaapAdapter are created, they register with ICS with the same `jobCallbackUrl`, `producerSupervisionCallbackUrl`. 
Scenario-2: Data Inconsistency between Instances during Job Creation

- ICS sends job creation messages to the Dmaap adapter, and the Kubernetes service, acting as a load balancer, distributes the calls to multiple replicas of the Dmaap adapter.
- Few jobs are created in Dmaap-adapter-0 and others in Dmaap-adapter1.
Scenario-3: Data Inconsistency between Instances during Job Deletion

- When remove job is called by ICS the message might be sent to a replica which is not having the job.
Solution

- Data storage in the form of DB can be implemented
- DB Trigger Notifications can be used to synchronize job information between the replicas
ICS Design
ICS Design – Job Creation (As Is)

- Implementation of Job data is in File
- If the request from client comes to ICS Instance 1, then the Job information is stored only in the Instance 1 as the default implementation is based on FileSystem
ICS Design – Job Retrieval (As Is)

- Since the Job information is stored in Instance 1, and the request comes to Instance 2, the Job information is not available.
- ICS will respond with 404: Job Not Found.
ICS Design – Job Deletion (As Is)

- Since the Job information is stored in Instance 1, and if the delete request comes to Instance 2, the Job information is not available
- ICS will respond with 404 : Job Not Found
ICS Design – InfoType Creation (As Is)

- Implementation of InfoType is in File
- If the request from client (like DMAapAdapter) comes to ICS Instance 1, then the InfoType information is stored only in the Instance 1 as the default implementation is based on FileSystem
- Here new InfoType5 is stored in Instance 1
Since the new InfoType information is stored in Instance 1, and the request comes to Instance 2, the InfoType information is not available

ICS will respond with 404: InfoType Not Found
ICS Design – InfoType Delete (As Is)

- Since the InfoType information is stored in Instance 1, and if the delete request comes to Instance 2, the InfoType information is not available.
- ICS will respond with 404: InfoType Not Found.
ICS Design – Producer Registration (As Is)

- Implementation of Producer information is maintained in memory.
- If the request from client (say DmaapAdapter) comes to ICS Instance 1, then the Producer information is maintained only in the Instance 1 as it is maintained only in-memory.
ICS Design – Producer Retrieval (As Is)

- If the request from client (say DmaapAdapter) for retrieval for Producer1 comes to ICS Instance 2, then it’ll respond with 404 : Producer Not Found
Solution

- Implement a shared DB to store Job information between ICS instances
ICS Design – Job Creation (To Be)

- Implementation of Job data is in Database Store
- If the creation request comes to Instance 1 the details are stored in Database.
- The job details are thus available to all the Instances in the cluster.
- Implement DB trigger to notify the other instances of ICS

Job Information is available in this ICS Instance also, since we are using DB
ICS Design – Job Retrieval (To Be)

- If the get request for Job comes to Instance 2, since the details are available in Database, it can retrieve the information.

- Instance 2 responds with Job information.
ICS Design – InfoType Creation (To Be)

- Implementation of InfoType data is in Database Store
- If the InfoType creation request comes to Instance 1 the details are stored in Database.
- The InfoType details are thus available to all the Instances in the cluster.

Client (eg: DMaapAdap ter) → Create InfoType → Load Balancer → Request to Instance 1 → Instance 1

ICS Cluster

- InfoType Information is available in this ICS Instance also, since we are using DB

DB Notify → DB Store
ICS Design – InfoType Retrieval (To Be)

- If the get request for InfoType comes to Instance 2, since the details are available in Database, it can retrieve the information.
- Instance 2 responds with InfoType information
ICS Design – Producer Registration (To Be)

- Implementation of Producer data is in Database Store
- If the Producer registration request comes to Instance 1 the details are stored in Database.
- The Producer details are thus available to all the Instances in the cluster.
ICS Design – Producer Retrieval (To Be)

- If the get request for Producer comes to Instance 2, since the details are available in Database, it can retrieve the information.
- Instance 2 responds with Producer information.
Thank You

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