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

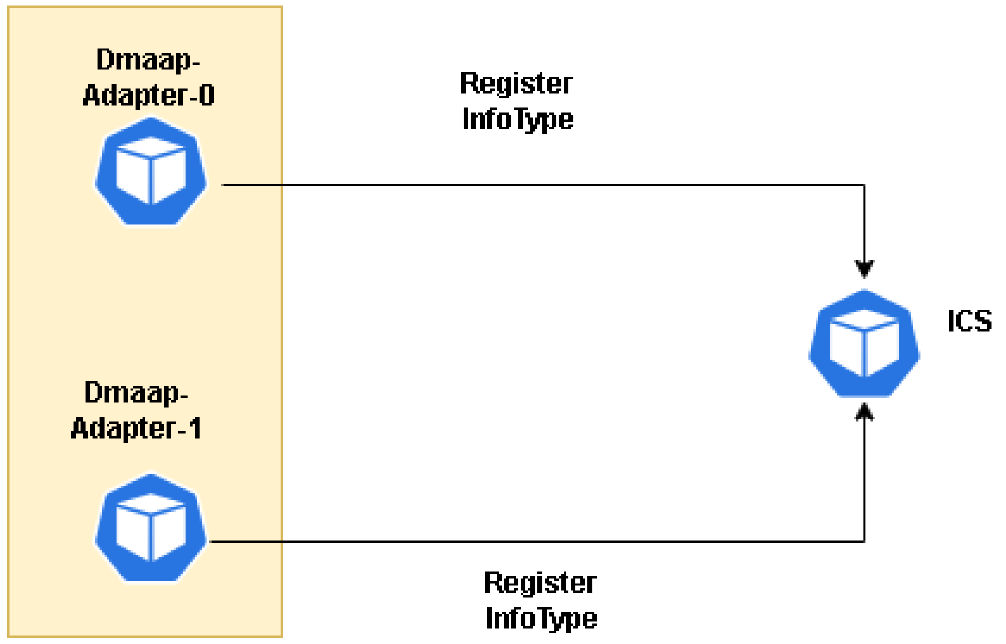
Dmaap-Adapter Scalability Solutions

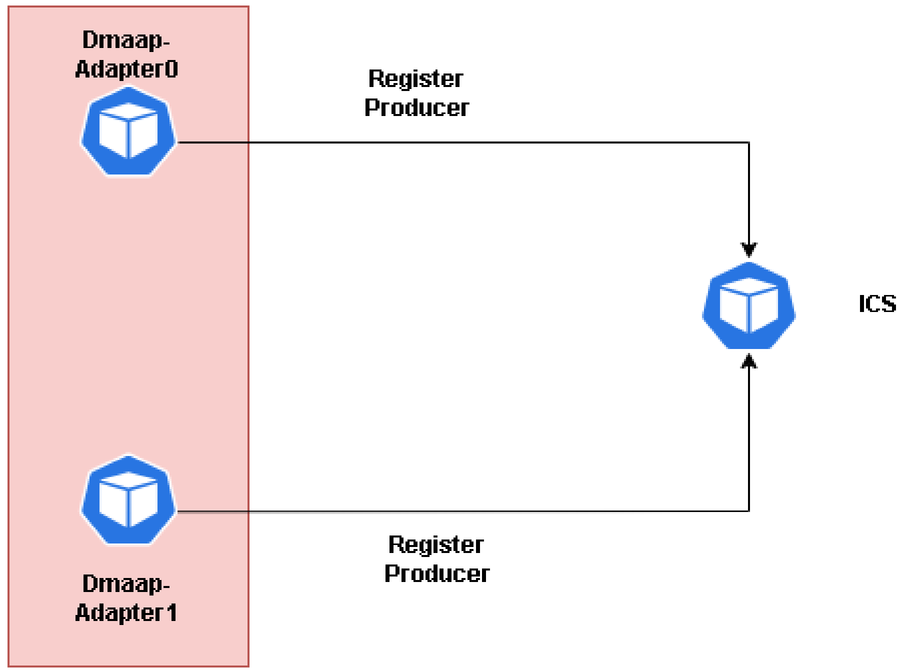
- Use Database to store job information.
- Sync Job Information between replicas (implementing DB trigger could be an option)

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

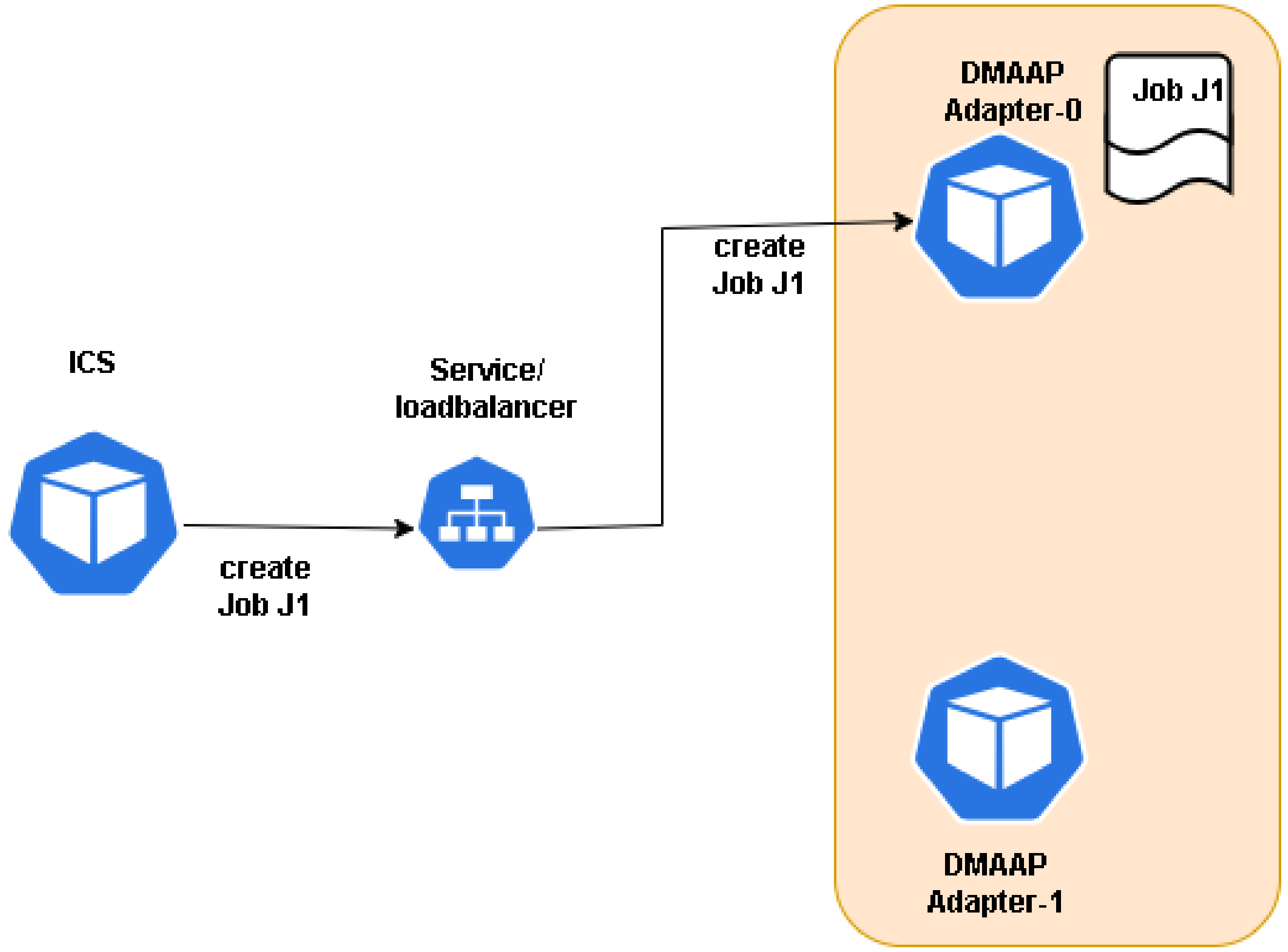
Scenario 1- Info-Type and Producer Registration with ICS





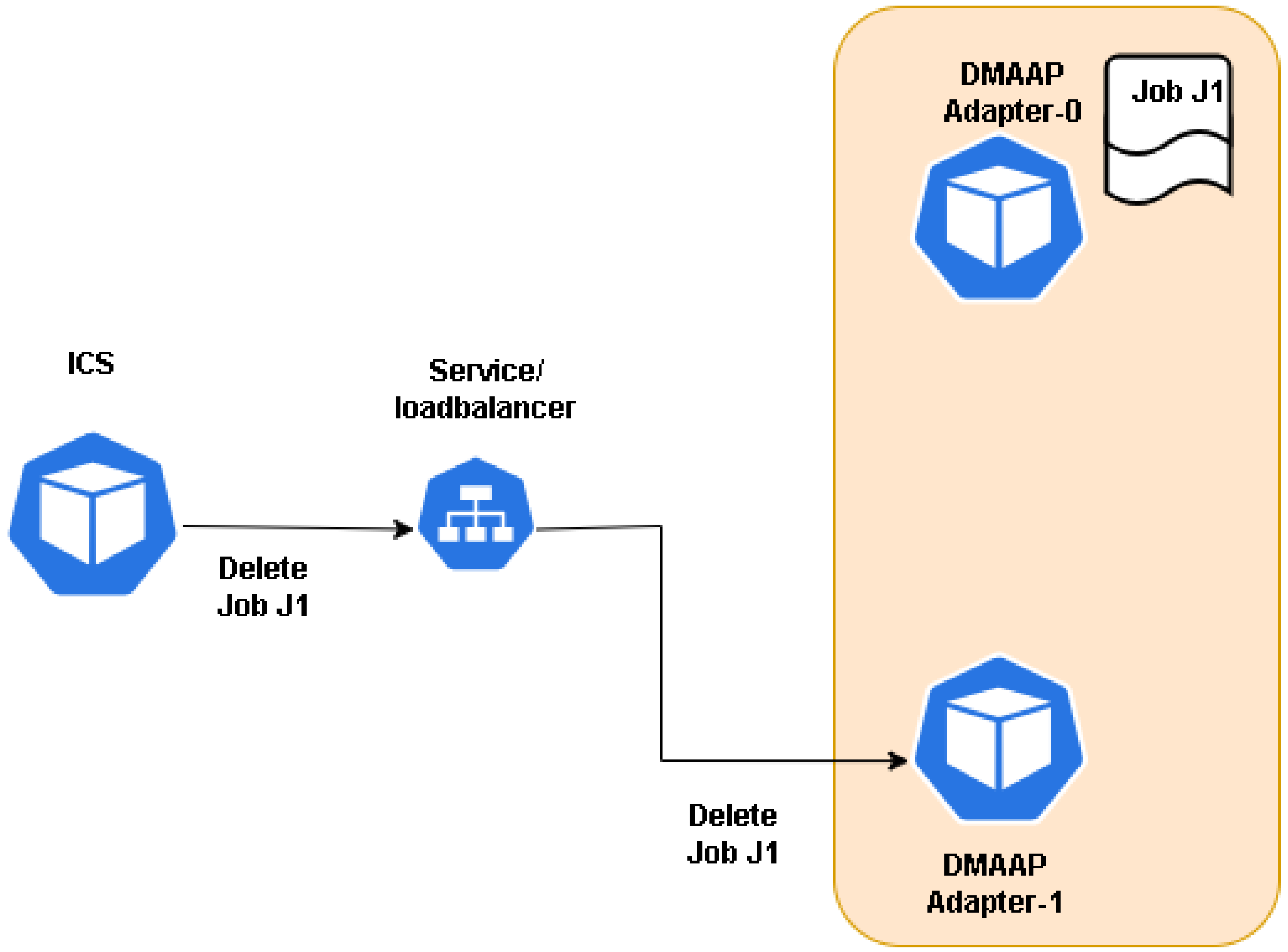
- When multiple replicas of DmaapAdapter are created they register with ICS with same jobCallbackUrl , producerSupervisionCallbackUrl.

Scenario-2: Data Inconsistency between Instances during Job Creation



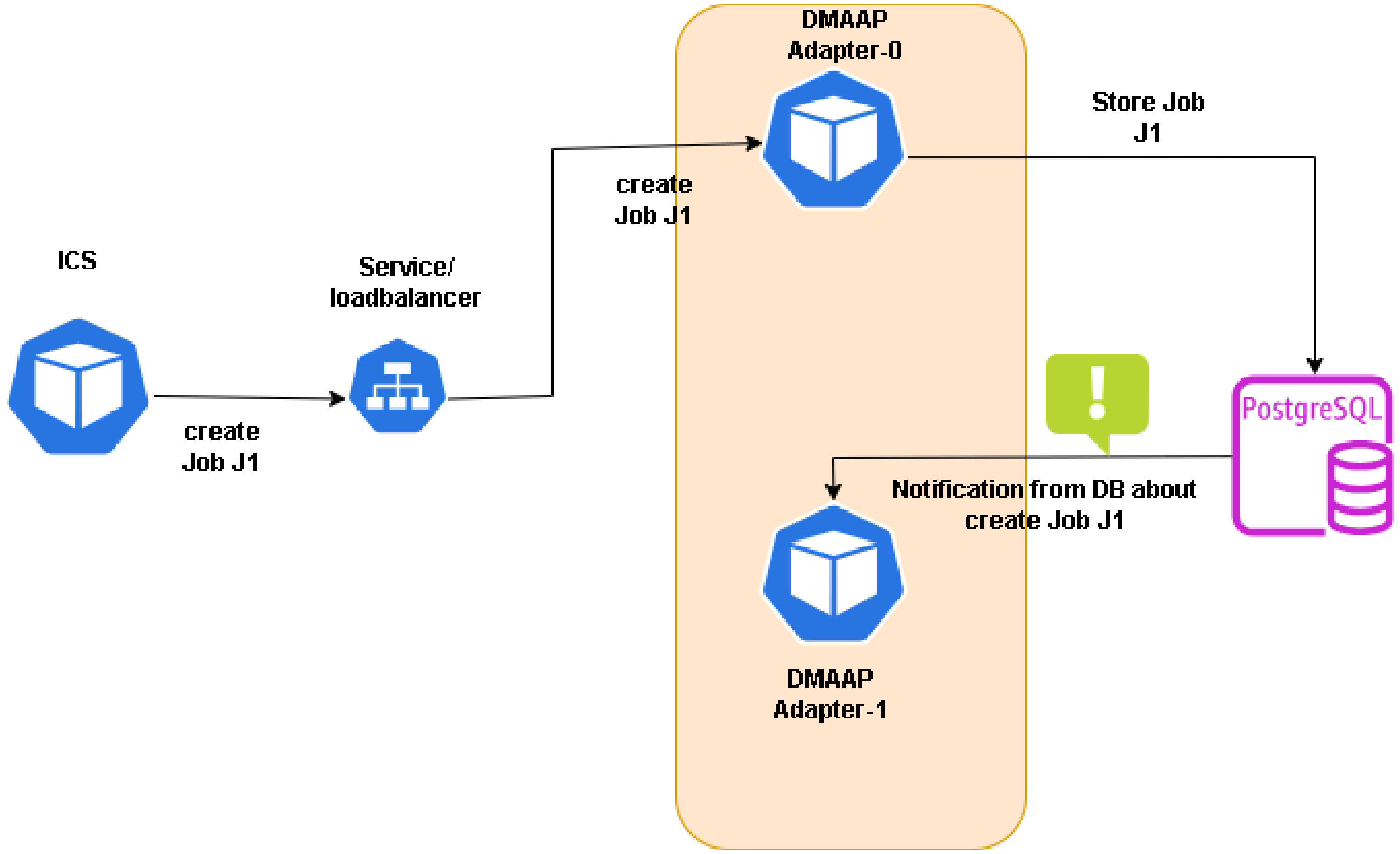
- ICS sends job creation messages to the Dmaap adapter, and the Kubernetes service, acting as a load balancer, distributes the calls to multiple replicas of the Dmaap adapter.
- Few jobs are created in Dmaap-adapter-0 and others in Dmaap-adapter1.

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.

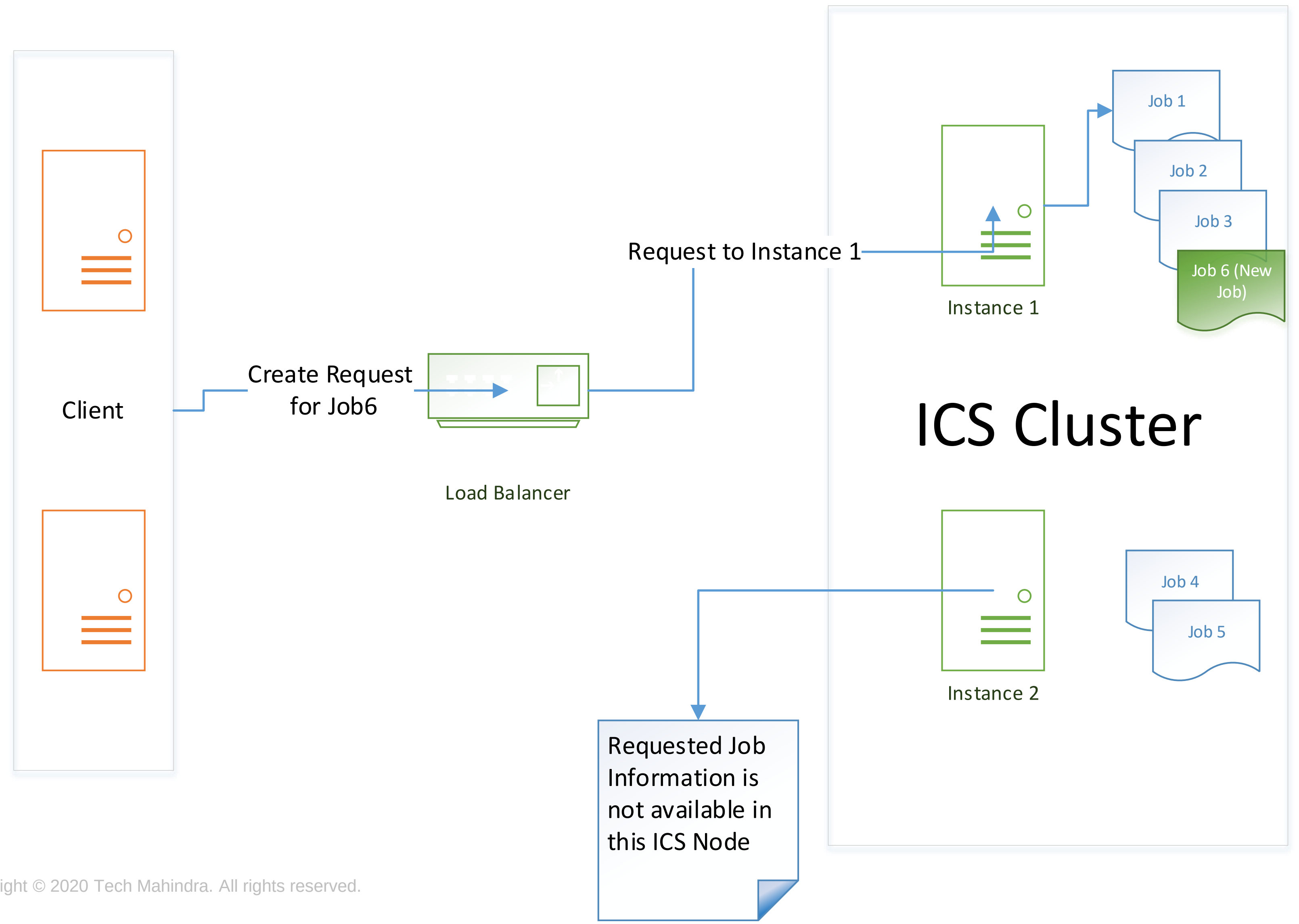
Solution



- Data storage in the form of DB can be implemented
- DB Trigger Notifications can be used to synchronize job information between the replicas

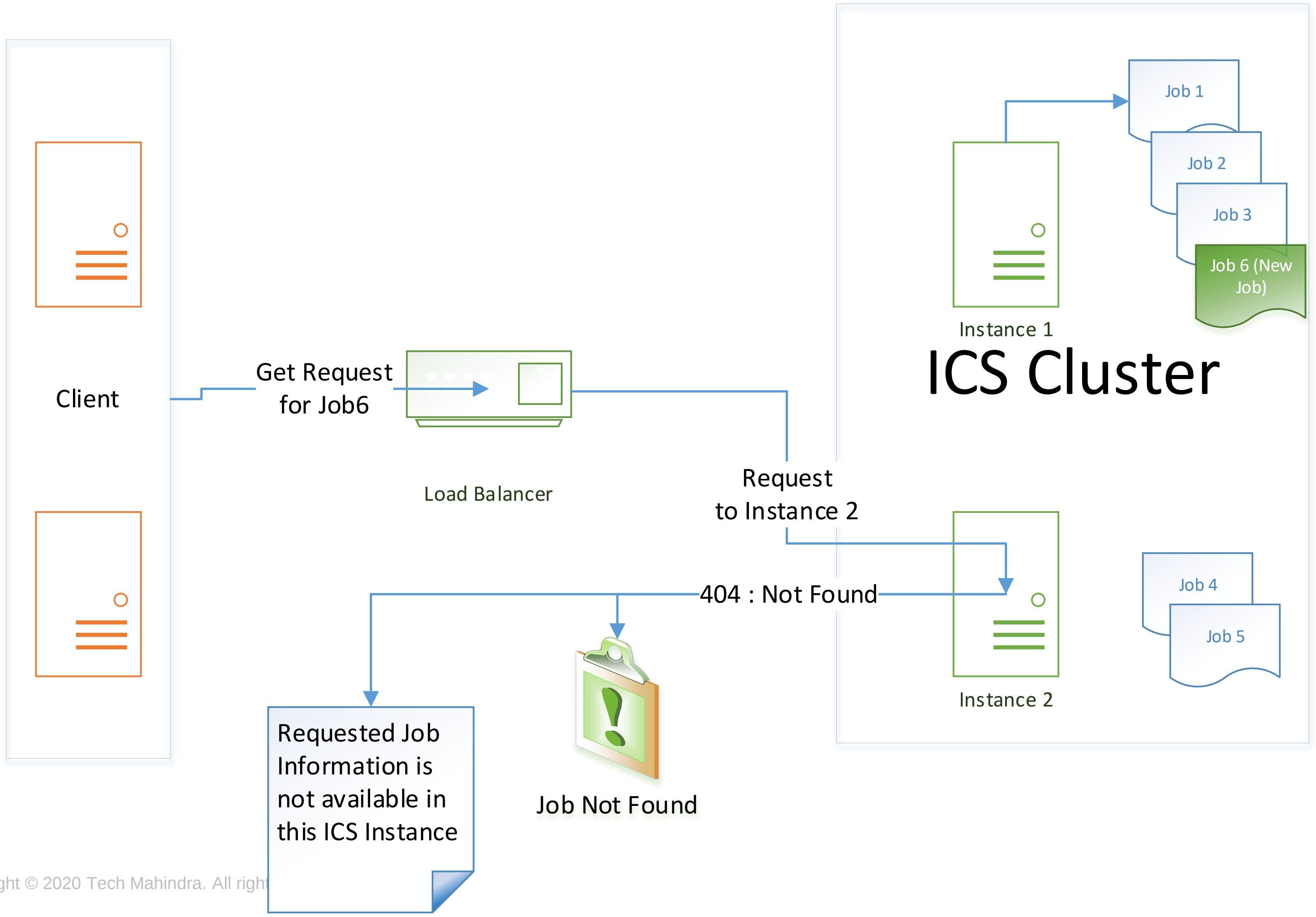
ICS Design

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

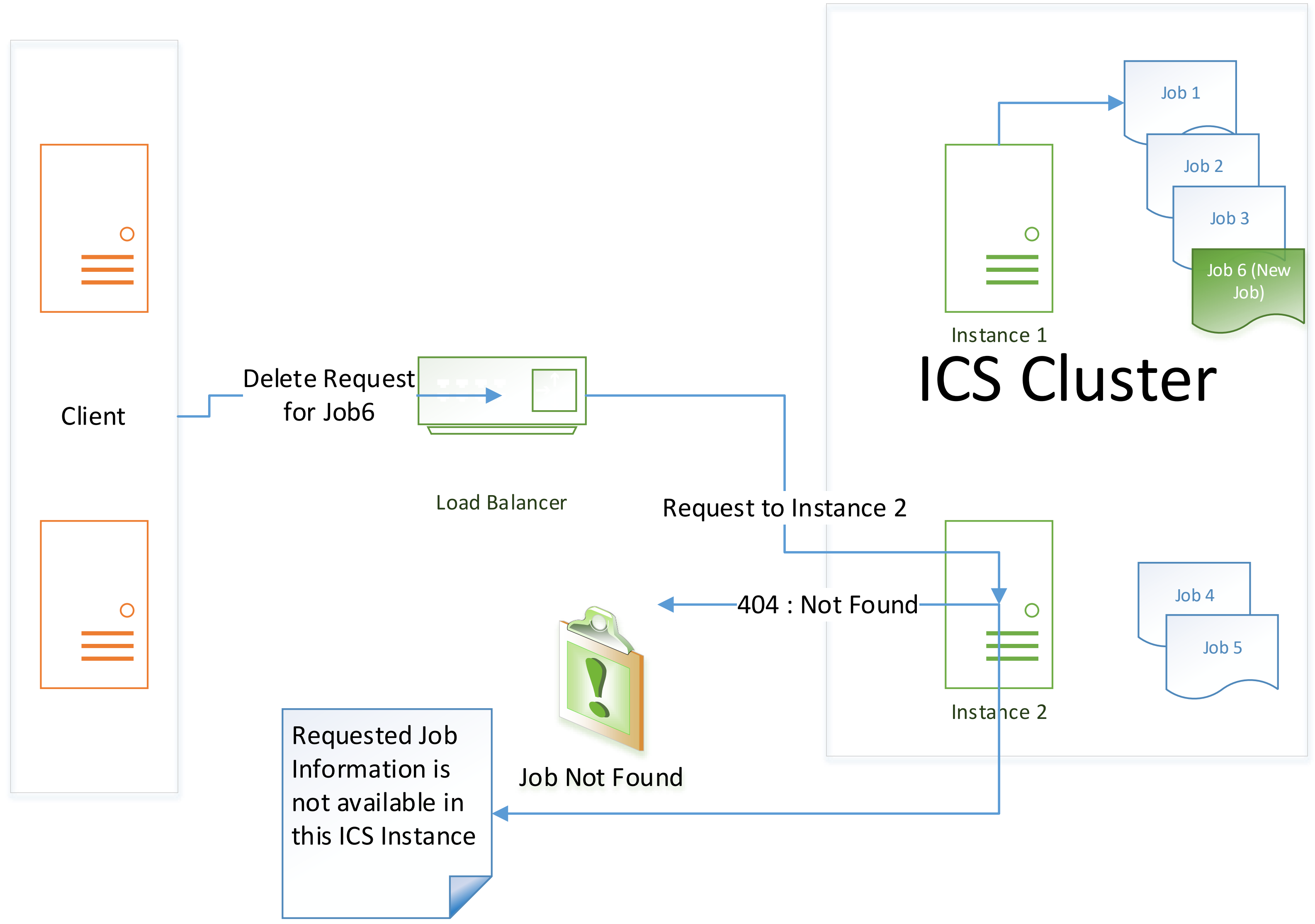
ICS Design – Job Retrieval (As Is)



Requested Job Information is not available in this ICS Instance

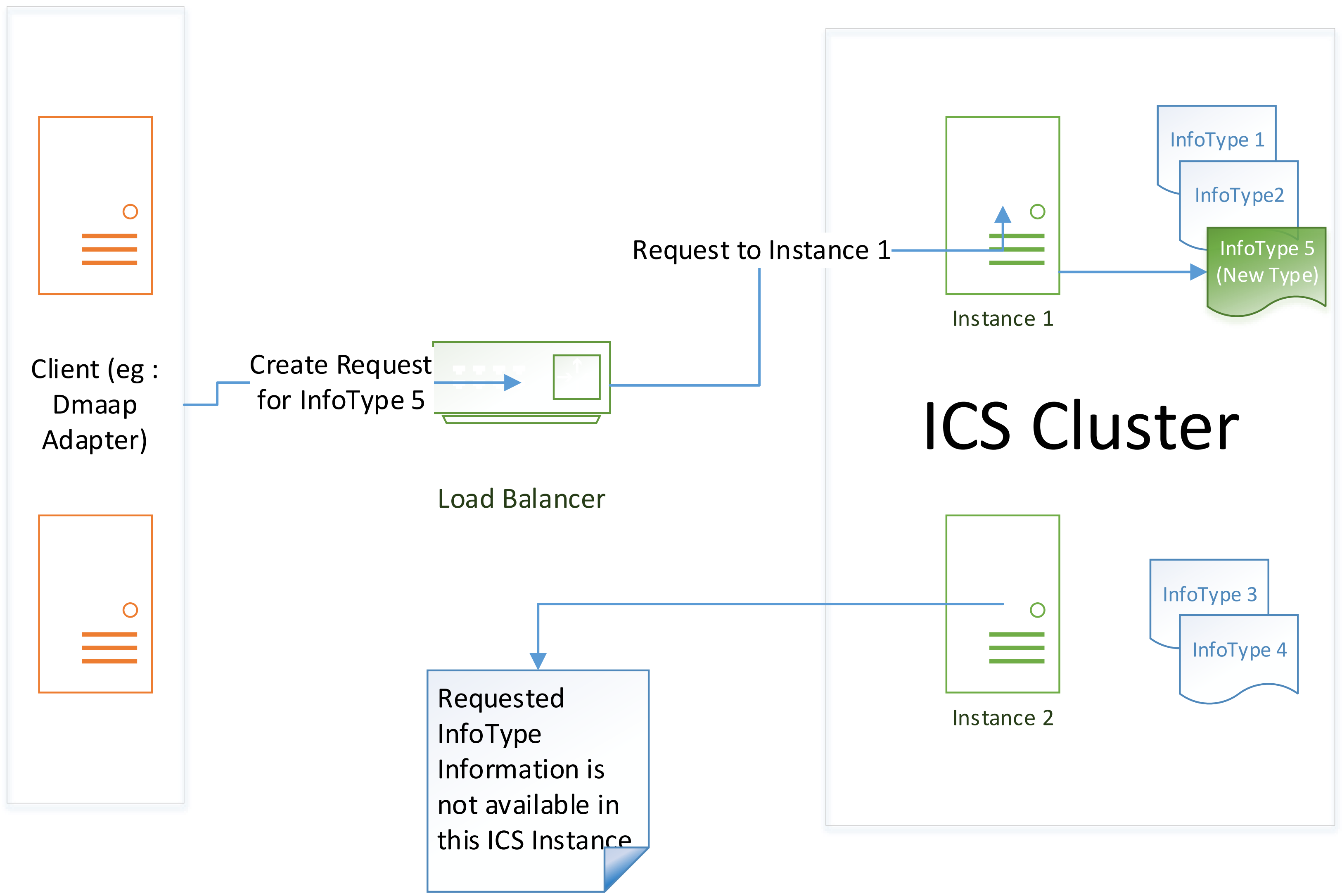
- Since the Job information is stored in Instance 1, and the request comes to Instance 2,, the Job information is not available
- ICS will respond with 404 : Job Not Found

ICS Design – Job Deletion (As Is)



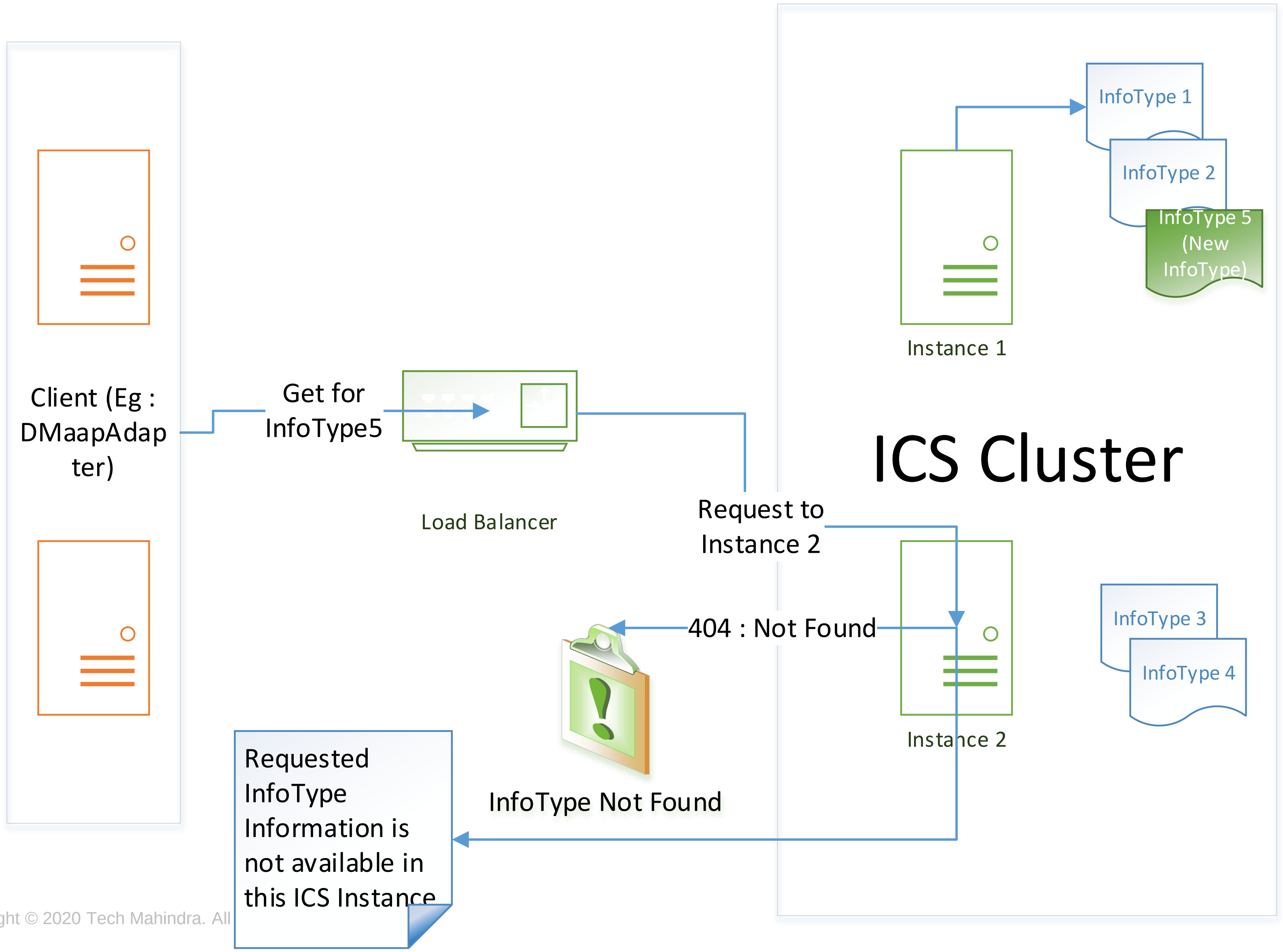
- Since the Job information is stored in Instance 1, and if the delete request comes to Instance 2, the Job information is not available
- ICS will respond with 404 : Job Not Found

ICS Design – InfoType Creation (As Is)



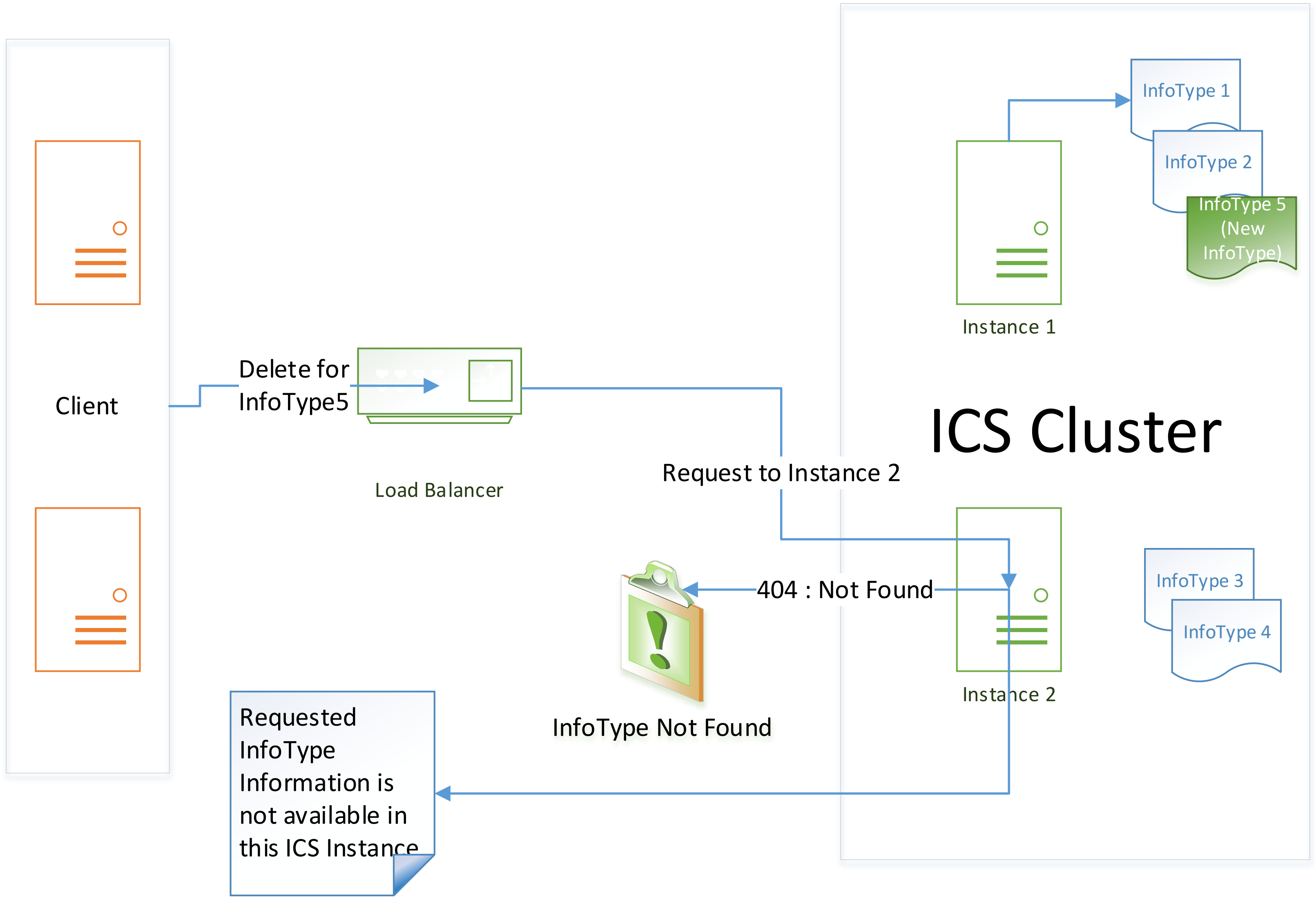
- Implementation of InfoType is in File
- If the request from client (like DMaapAdapter) comes to ICS Instance 1, then the InfoType information is stored only in the Instance 1 as the default implementation is based on FileSystem
- Here new InfoType5 is stored in Instance 1

ICS Design – InfoType Retrieval (As Is)



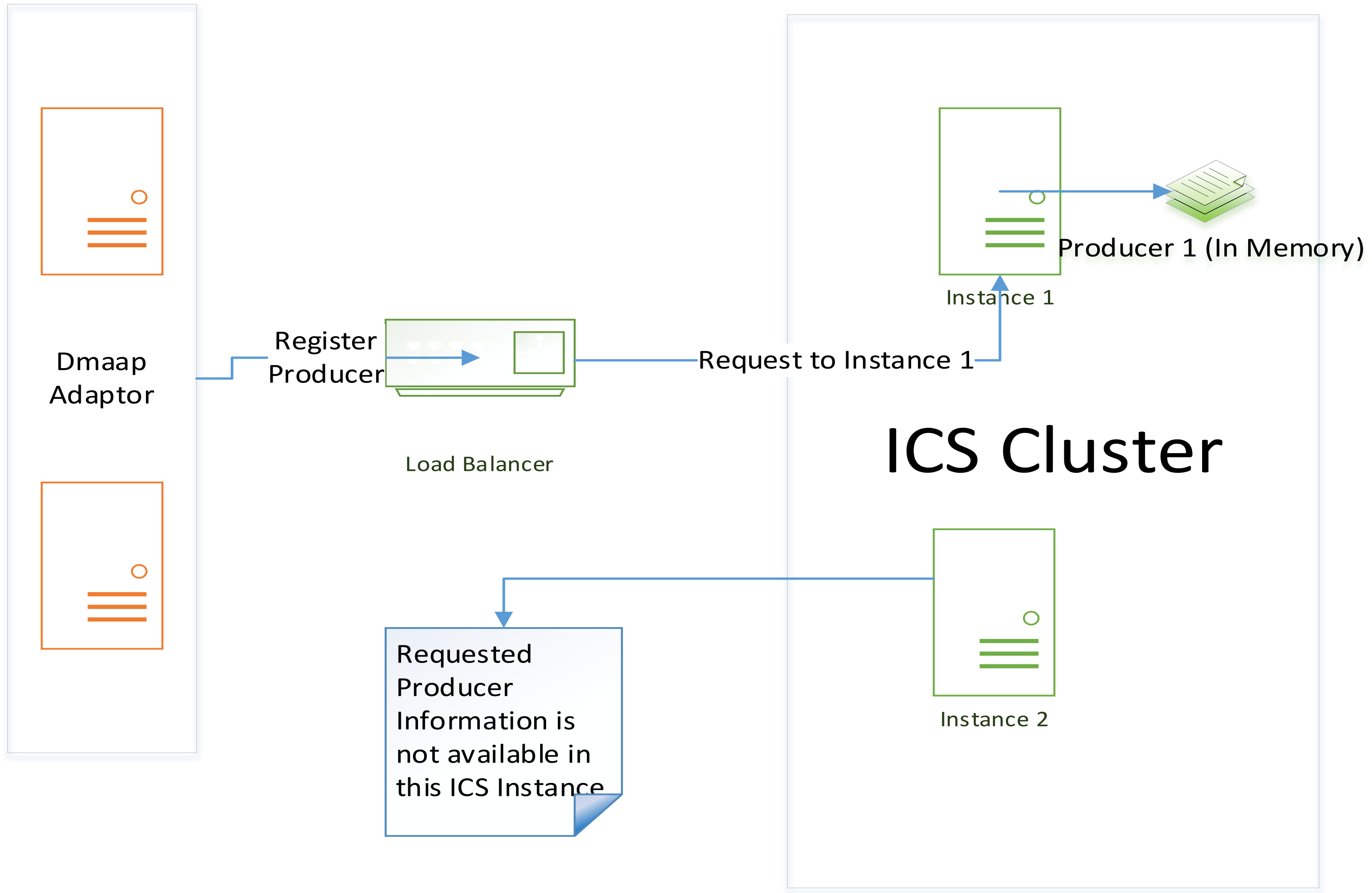
- Since the new InfoType information is stored in Instance 1, and the request comes to Instance 2,, the InfoType information is not available
- ICS will respond with 404 : InfoType Not Found

ICS Design – InfoType Delete (As Is)



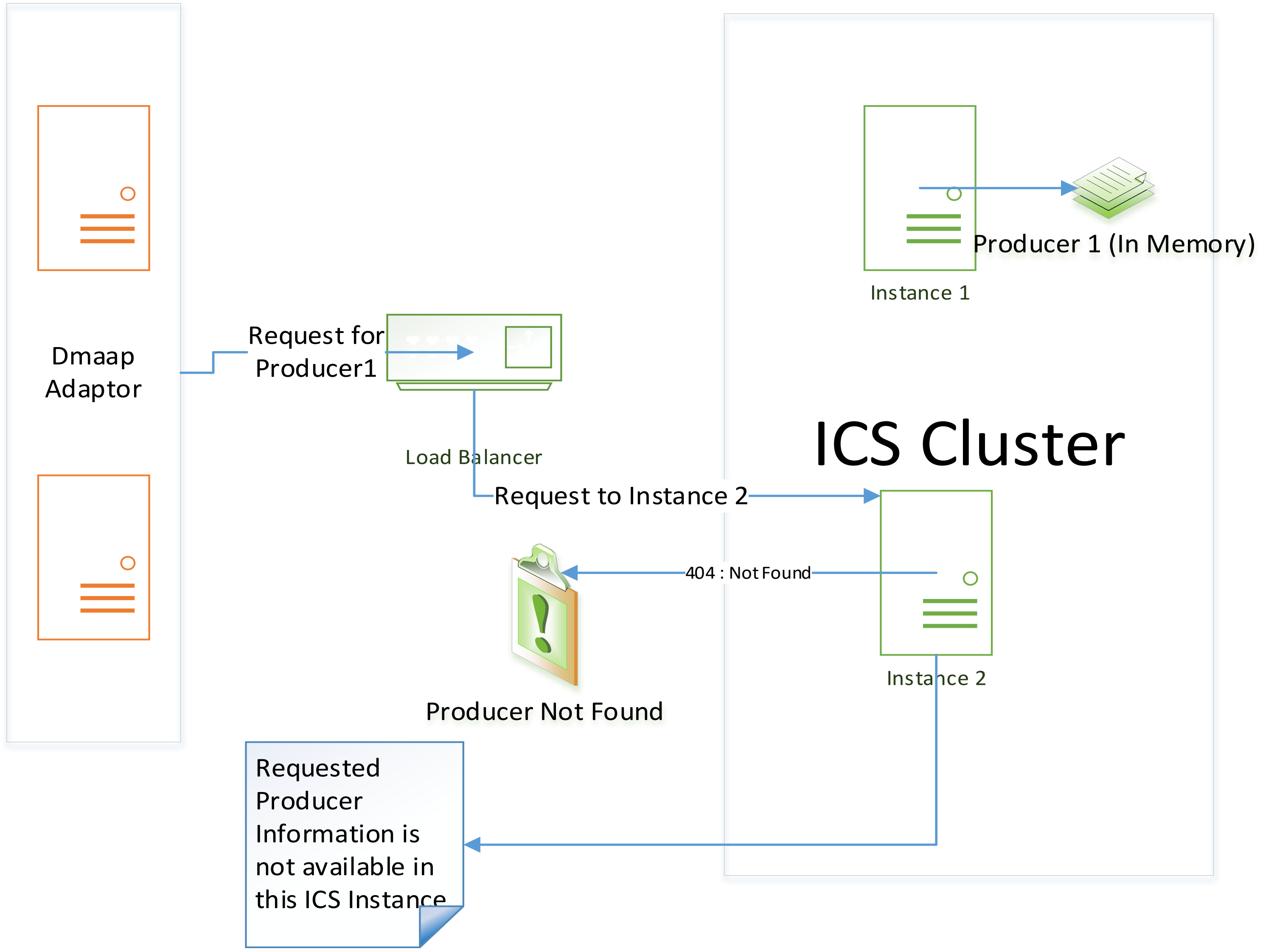
- Since the InfoType information is stored in Instance 1, and if the delete request comes to Instance 2, the InfoType information is not available
- ICS will respond with 404 : InfoType Not Found

ICS Design – Producer Registration (As Is)



- Implementation of Producer information is in 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)

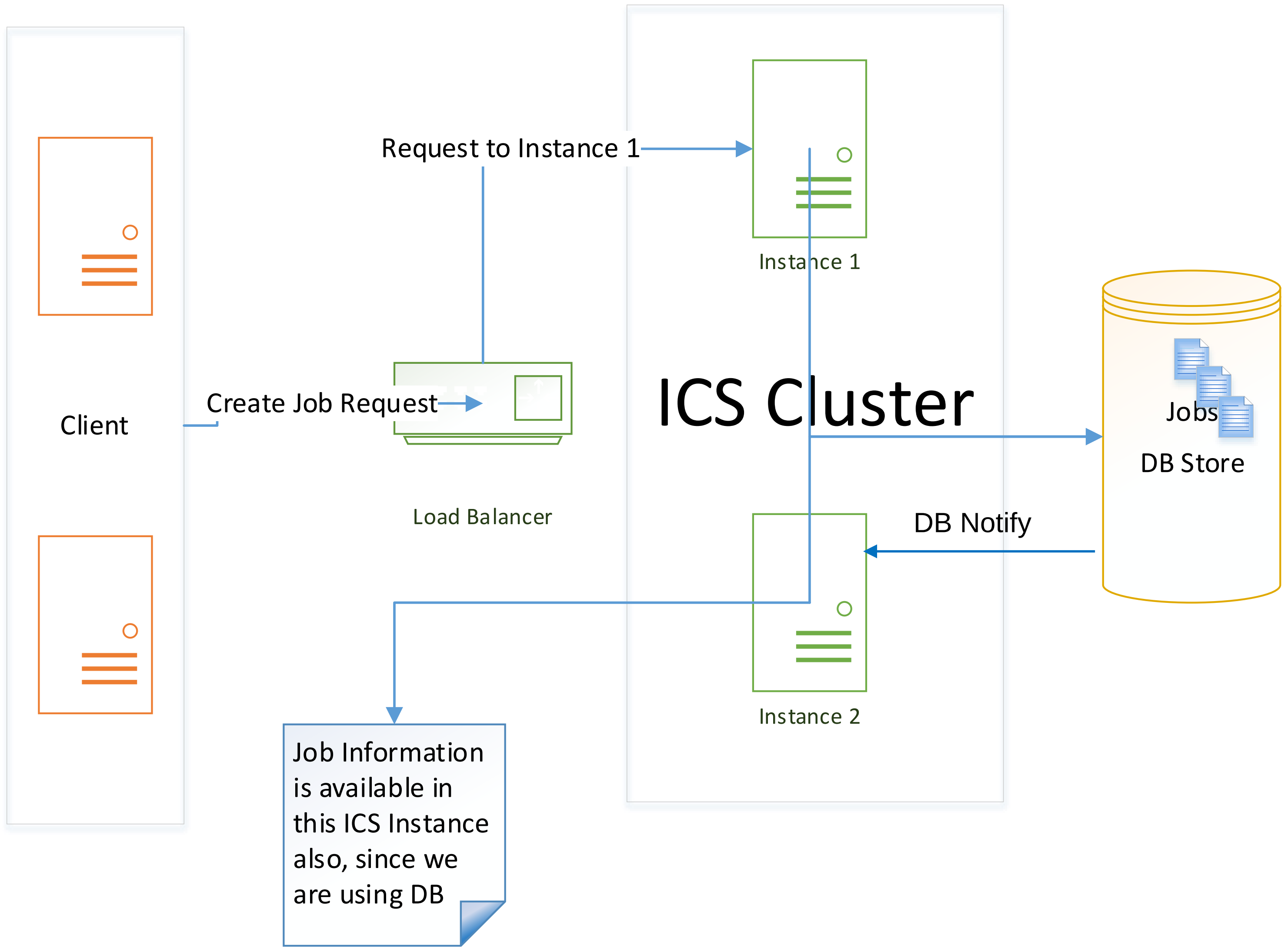


- If the request from client (say DmaapAdapter) for retrieval for Producer1 comes to ICS Instance 2, then it'll respond with 404 : Producer Not Found

Solution

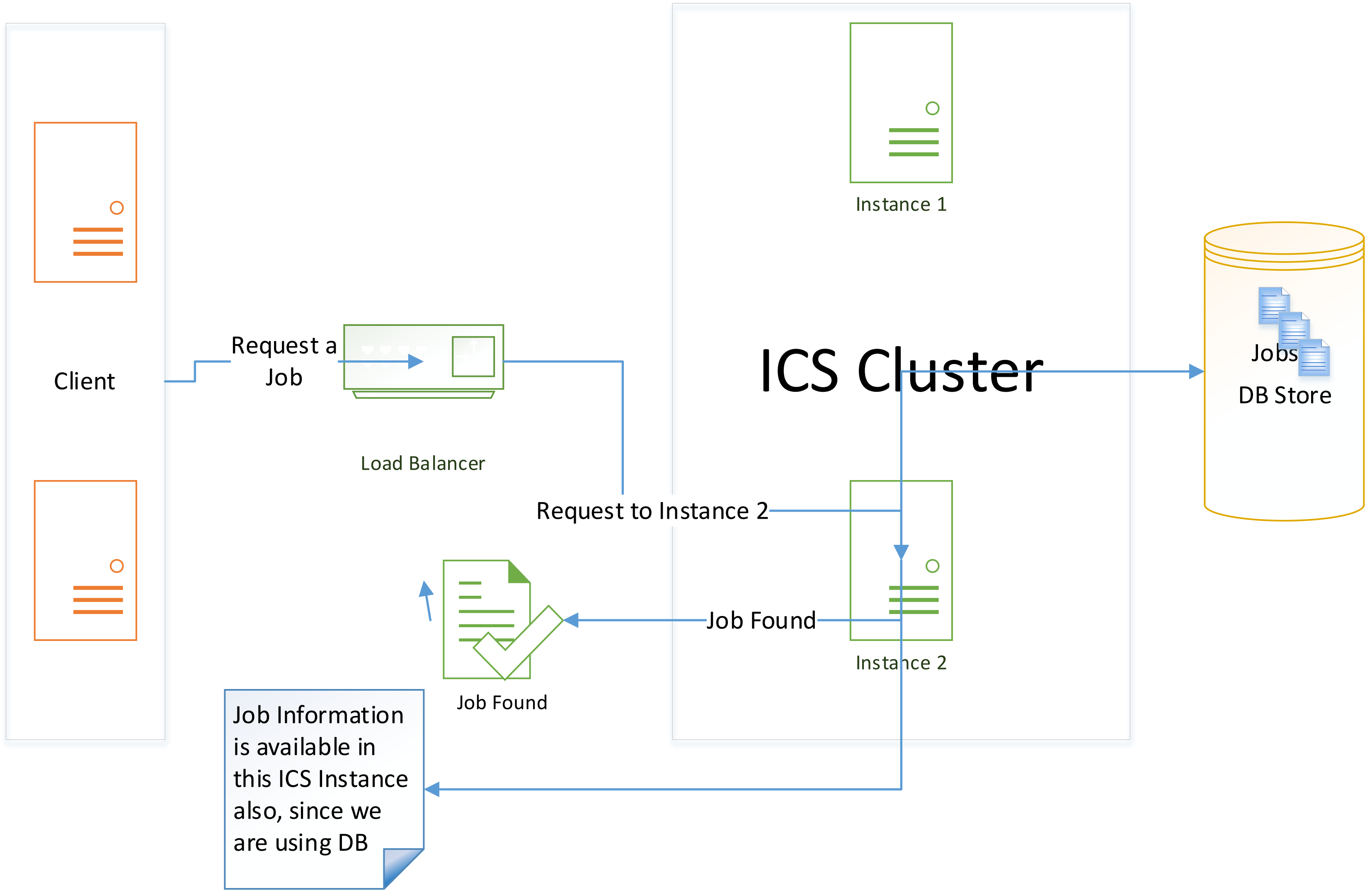
- Implement a shared DB to store Job information between ICS instances

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

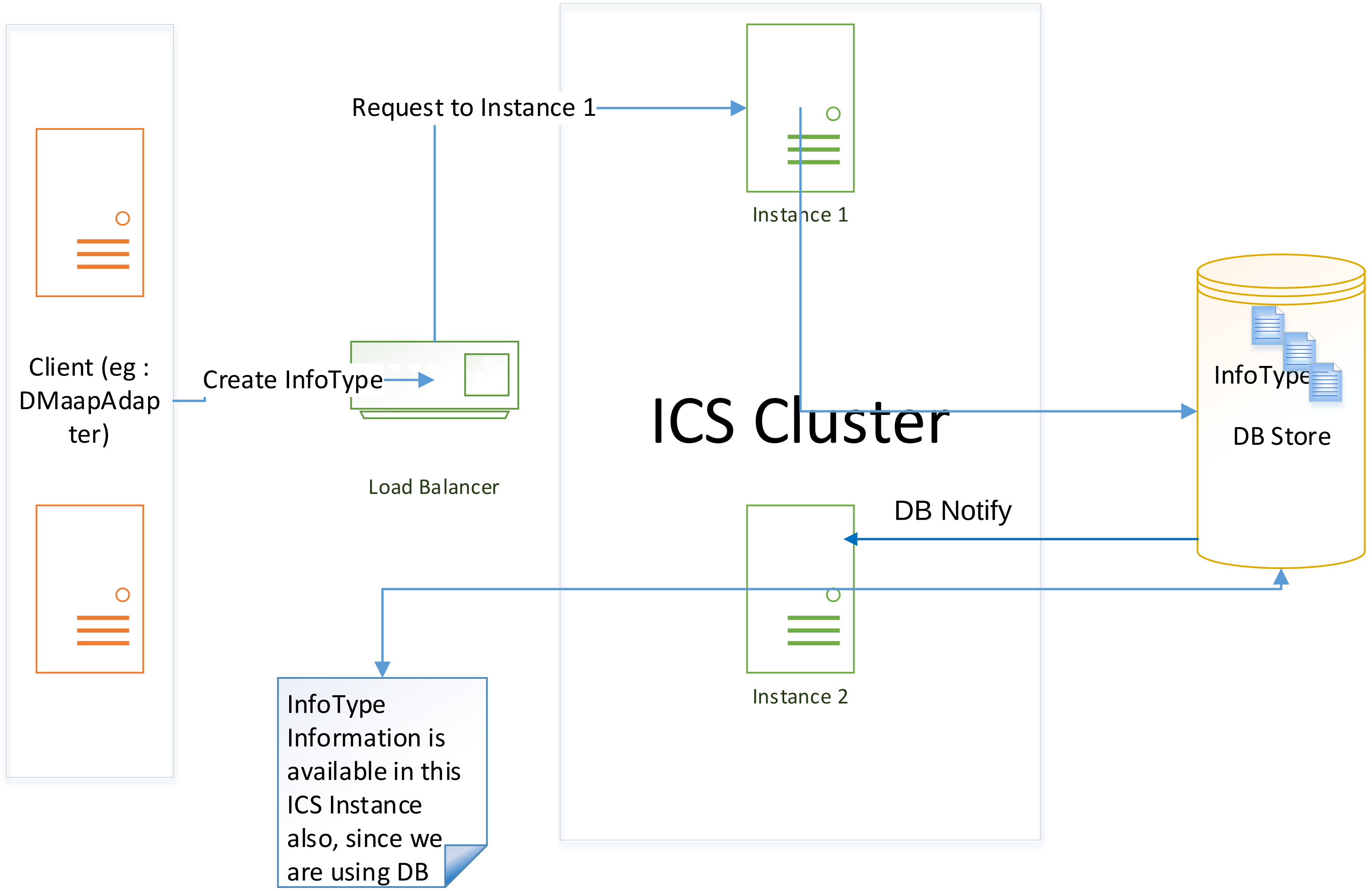
ICS Design – Job Retrieval (To Be)



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

- 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

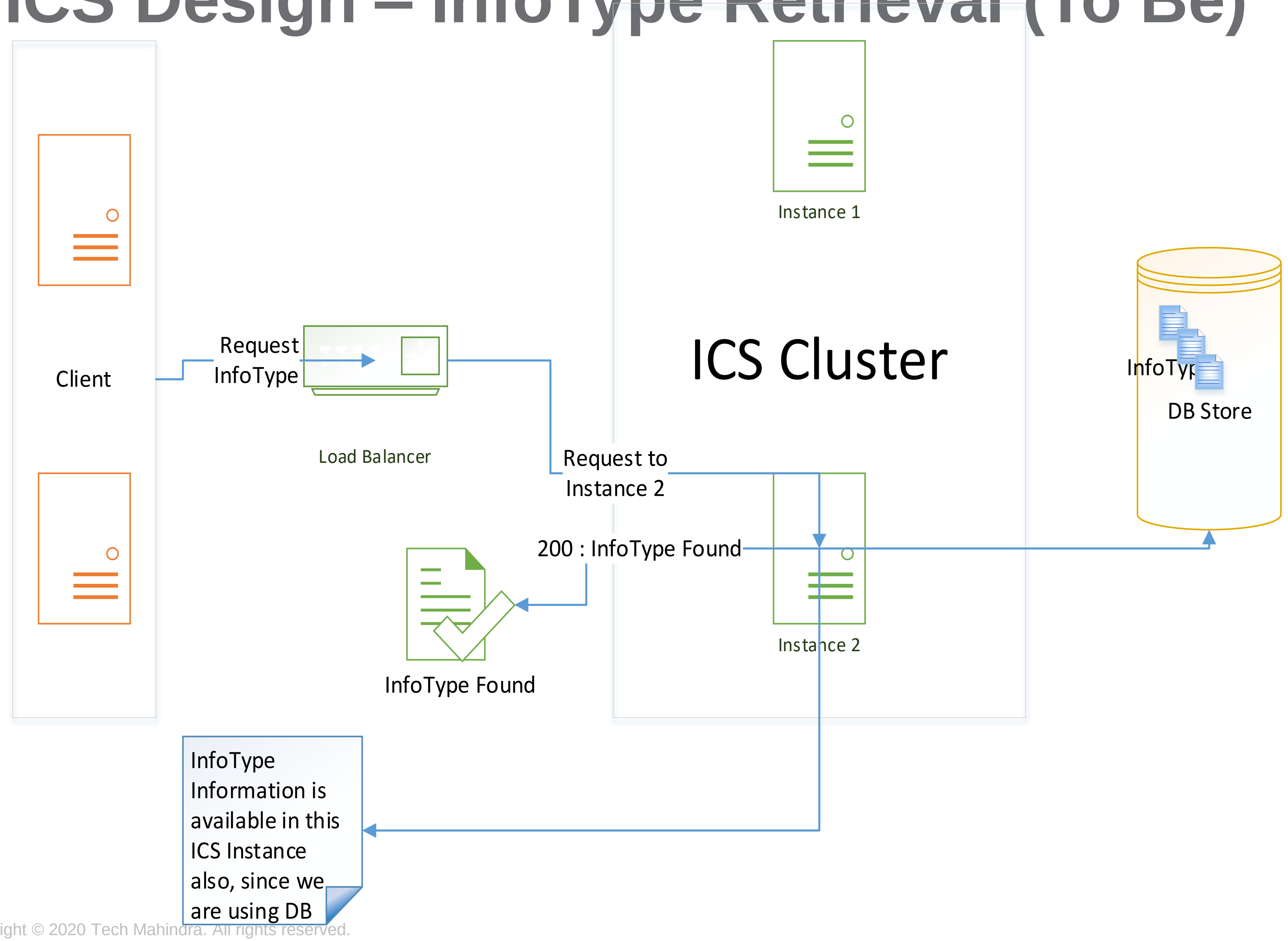
ICS Design – InfoType Creation (To Be)



Request to Instance 1
Instance 1
Client (eg : DMaapAdapter)
Create InfoType
Load Balancer
ICS Cluster
InfoType
DB Store
DB Notify
Instance 2
InfoType Information is available in this ICS Instance also, since we are using DB

- 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.

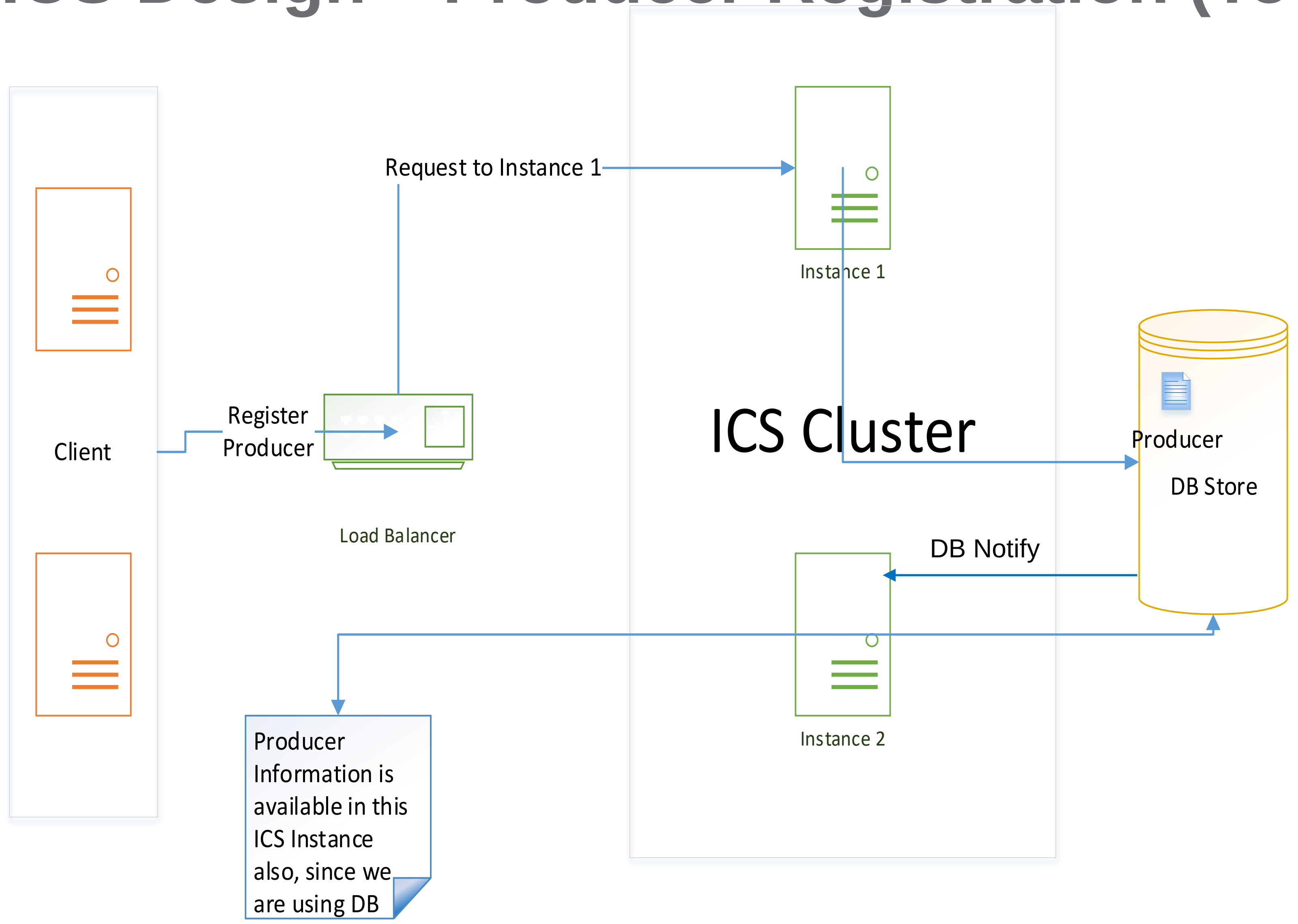
ICS Design – InfoType Retrieval (To Be)



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

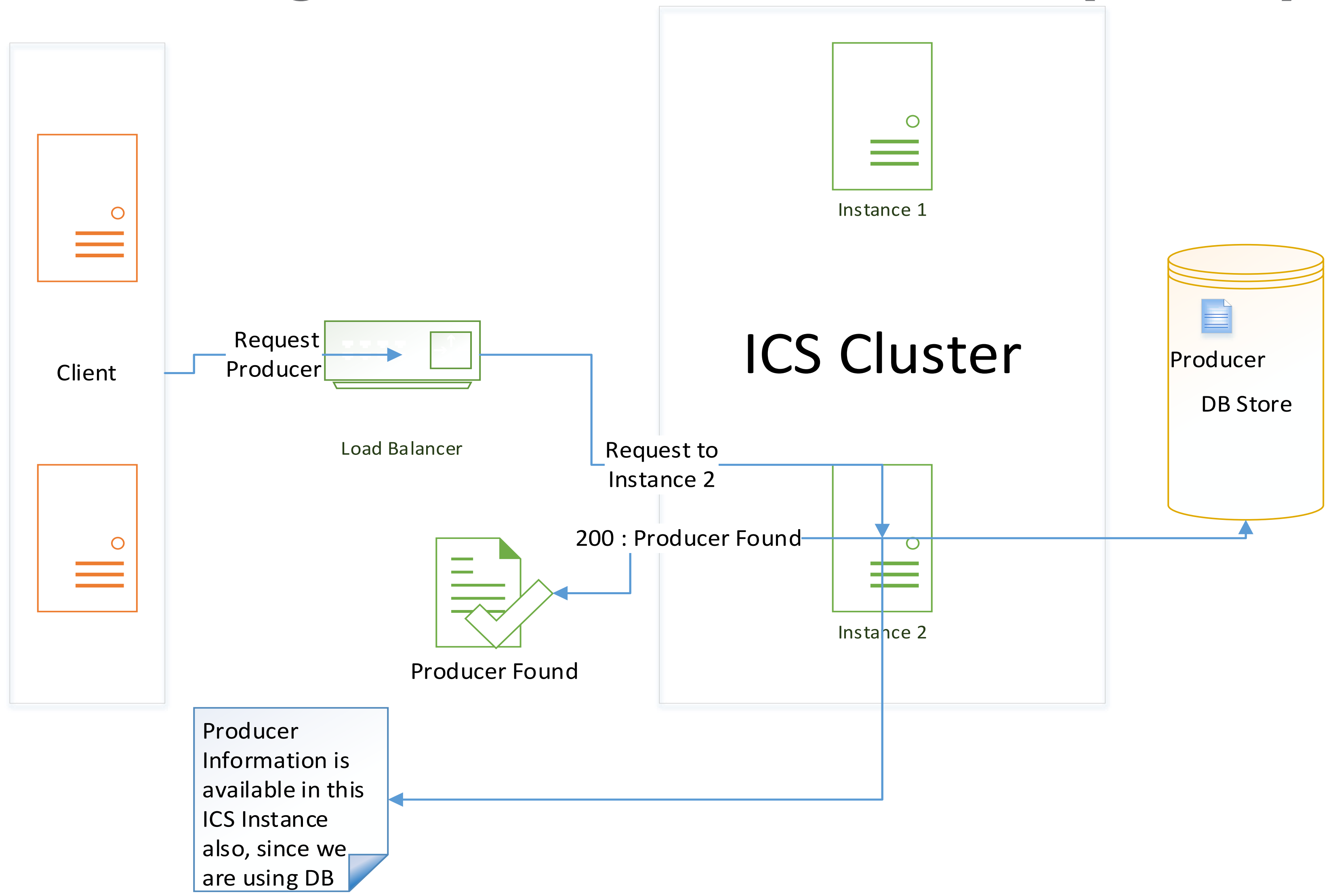
- If the get request for InfoType comes to Instance 2, since the details are available in Database, it can retrieve the information.
- Instance 2 responds with InfoType information

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)



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

- 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