REST API

Search_Service

gRPC

request

reply

RabbitMQ Message Bus

request

gRPC

reply

Server_Service

SQL

A publisher sends a
message into RabbitMQ.

The message is routed
into a queue.

The consumer receives and
processes the message.

P → 🐰 → | | | | | Queue → C

Basic.Ack ← Yes ← Did the message process successfully?

If the message processed successfully,
it will send an acknowledgment.

No

Basic.Reject
or Basic.Nack

If the message failed processing, both rejecting it and
negatively acknowledging it will perform the same
task, letting RabbitMQ know the consumer did not
successfully process the message.

channel.BasicQos(prefetchSize: 0, prefetchCount: 1, global: false);

rpc_queue

Client

Request
reply_to=amqp.gen-Xa2...
correlation_id=abc

C

reply_to=amq.gen-Xa2...

Server

S

Reply
correlation_id=abc

Client

SendAsync()

|||||| Queue ||||||

await

Server

Task

complete

|||||| Queue ||||||

Cluster

Node

Pod
Server_Service Container

80		66

80		66
Cluster IP		

Pod
Server_Service SQL Container

1433

1433
Cluster IP

Pod
RabbitMQ Container

5672		15672

15672		15672
Cluster IP		

Pod
Ingress Nginx Container

80

Pod
Search_Service Container

80

80
Cluster IP

Load Balancer

80

Node Port

3xxxx		80

Node Port

15672

Kubernetes (Docker Desktop)

Container Runtime (Docker)

Operating System (Windows 11 with WSL2)

Hardware (PC)