**Devops - Project Scenario**

You are employed as a DevOps engineer in a business. Recently, we acquired a software package  
with two application components A and B from a third-party vendor. Therefore, each solution  
implementation consists of two components. We refer to them as application A and application  
B. They are so interdependent that running them on different servers would result in performance  
issues. The application vendor has also informed us that we cannot operate two components of  
application A on the same server. The identical holds true for application B. Therefore,  
colocation of two identical components on the same server is prohibited.  
Our company, on the other hand, has a "container-first" philosophy and has requested that you  
execute the software solution on Kubernetes. We will run three instances of the application. The

necessity for three instances of the software solution stems from 1) the presence of HA and 2) the  
huge volume of work.  
You already possess an EKS cluster with three nodes. There are three distinct availability zones  
for the nodes. You have containerized the applications A and B. Therefore, we want applications  
A and B to execute on the same worker node. If we have three worker nodes in three availability  
zones, we must ensure that they are all operational according to the following conditions.:  
1. Every worker node receives a single instance of application A. (3 marks)  
2. Every worker node receives a single instance of application B. (3 marks)  
3. No two application A instances share the same node. (3 marks)  
4. On the same node, no two applications B are co-located. (3 marks)  
5. Each node has a pair of applications A and B. (3 marks)  
The intended topology appears as follows:

A diagram of a software application

Description automatically generated with medium confidence  
I will test your solution by removing the deployments of application A and application B several  
times to ensure that the desired architecture will function as intended. Please call pods Pod A and  
Pod B so that they may be readily identified.  
Both application A and application B can utilize Nginx. In this assessment, the contents of the  
containers are irrelevant. We wish to ensure that the desired topology is implemented.