**Step 2: Establish Iteration Goals by Selecting Drivers**

For this iteration we will be focusing on QA-1 and QA-2. More specifically we will be looking at R32 (the system shall have a downtime at most 4 hours/ month).

**Step 3: Choose One or More Element of the System to Refine**

For the server scenario the systems that will be refined are the physical system nodes. More specifically, the server side of the environment.

**Step 4: Choose One or More Design Concepts that Satisfy the Selected Drivers**

|  |  |
| --- | --- |
| Design Decision and Location | Rationale |
| Introducing a replicating component for the important elements of the server. | * Down time will need to be mitigated through multiple servers. * Active replication will allow the maintenance of multiple servers   Alternative: a hard alternative to find due to the instability of a single server |
| Introducing an element for the server maintenance. A command queue for higher priority. | * Servers must be maintained be real people. * Commands by maintainers must take priority * Directly correlated to QA-1 and QA-2   Alternative: A message queue could be implemented but it would not conform to QA-2 |

**Step 5: Instantiate Architectural Elements, Allocate Responsibilities and Define Interfaces**

|  |  |
| --- | --- |
| Design Decisions and Location | Rationale |
| Use active redundancy and load balancing in the application server. | Because we’ll have multiple servers sharing the workload, it makes sense to distribute the load across all the servers to prevent the opportunity to overload any individual server, which could cause downtime. Client requests will be received by a load balancer, which will redirect them to the various servers according to their current load. This also means that the different application servers can process several requests concurrently, further improving performance. |
|  |  |

**Step 6: Instantiate Architectural Elements, Allocate Responsibilities and Define Interfaces**

The diagram below is a deployment diagram that introduces redundancy into the system



|  |  |
| --- | --- |
| Element | Responsibility |
| WebBrowser | The client’s web browser. |
| LoadBalancer | Receives requests from clients and sends them to the appropriate application servers. Also sends information back to clients. Also presents a public IP address |
| ApplicationServer | Identical instances of the application server. |
| DatabaseServer | Persistent storage using DBMS |
|  |  |

**Step 7: Perform Analysis of Current Design an Review Iteration Goal and Achievement of Design Purpose**

|  |  |  |  |
| --- | --- | --- | --- |
| Not Addressed | Partially Addressed | Completely Addressed | Design Decisions Made During the Iteration |
|  |  | UC-1 | Selected appropriate domain model for this use case. Furthermore, selected the proper sequence diagram that would describe the appropriate use case. |
|  |  | UC-2 | Selected appropriate domain model for this use case. Furthermore, selected the proper sequence diagram that would describe the appropriate use case. |
|  |  | UC-6 | Selected appropriate domain model for this use case. Furthermore, selected the proper sequence diagram that would describe the appropriate use case. |
|  |  | UC-7 | Selected appropriate domain model for this use case. Furthermore, selected the proper sequence diagram that would describe the appropriate use case. |
| CON -8 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |
| QA-1 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |
|  |  | QA-2 | The decision to use active redundancy and load balancing will ensure high availability. Further refinement is necessary. |
| QA-5 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |
| QA-6 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |
| QA-7 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |
| CON-1 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |
| CON-2 |  |  | No relevant decisions made, as it is necessary to identify the elements that participate in the use case associated with the scenario. |