BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
I SEMESTER 2020-21

Mid Reports DSE CL ZG628T

Project Title: Knowledge Based Life Cycle Management for Applications &

Infrastructure Components in Scaled Hyper Converged Software Defined Data Centers.

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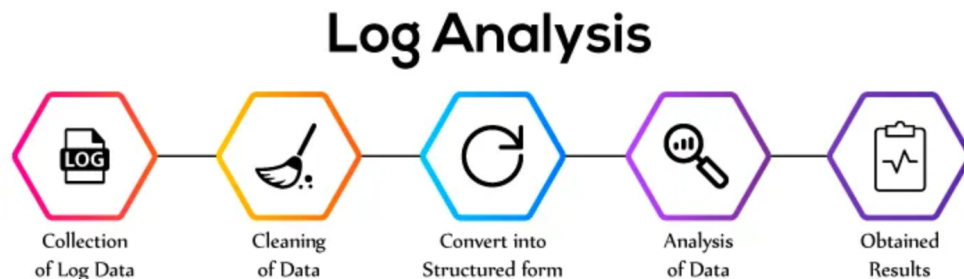
Project Code Link: https://github.com/rvirjn/sddc_lcm

Code Execution Environment: http://13.234.110.245:8082/tree/sddc_lcm

Production Environment: http://13.234.110.245

1. Detailed plan of work as per dissertation

#	Task	Expected date of completion	Names of Deliverables
1	Research/ Review/ analysis	3April -10April 1 week	☑
2.	Agent & Manager class Implementation	10April- 30April 2021 2-3 weeks	☑
3	ML Techniques implementation	1 May- 20May 2021 2-3 weeks	☑
4	DB Server, Log Server, Services Implementation	20June-10 June 2021 2-3 weeks	☑
5	Documentation	10June -15June 2021 5days	☐
6	End2End	15June - 5July 2021 2-3 weeks	☐

2. Detail WorkFlow:

1. For each application in the SDDC , OLA Agent will generate a unique Id and associate it with the application. This data will be maintained in the table called "OLA Agent Table".

   2. case 1 - Whenever any application gets "Upgrade Availability", immediately OLA Agent forms a request to the OLA Agent with Application Name, Application Id and SDDC Id.

   3. This request will be proxied to the OLA Manager.

   4. OLA Manager forms a search string with the details of Application Id and search Period [Max 1 year] and handover the request to Machine Learning Module [Analytic Module].

   5. With the inputs given by OLA Manager, ML Technic will run against the Logs Server data with search criteria. ML Technics will predict the best window time for the application to trigger LCM operation and also it will predict how many users may be users for that Application or Entity in that predicted Optimal Window time.

   6. The ML will return the Optimal proposed time along with the Estimated Risk in the proposed time to the OLA Manager.

   7. OLA Manager proxy the information to OLA agent and OLA agent will provide the details to the Administrator or user in the form of display text or this can be maintained in a separate table called "Entity LCM Table" in the management node of SDDC.

   8. Entity LCM table is nothing but a simple table holding the information of Application Id, Name, Proposed LCM Time, Risk in the Proposed time, likewise it will maintain for all the applications.

9. Case 2 – If there is no "Upgrade Available" for an entity but the Administrator wishes to find out the best time for an upgrade, then he can manually trigger an event that will set a Bit in the buffer, and Agent Proxy will read the bit and immediately follow steps 3 to 8.

Note : Implementers have an option to integrate the upgrade code based on the invention estimated time – meaning if the user or administrator opted the invention or Agent Manager proposed time, then at the proposed time Upgrade will be automatically triggered without Administrator intervention. This can be achieved if the Administrator integrates LCM code to the "Entity LCM Table". This Entity LCM Table has an option even to trigger the LCM based on Administrator choice.

Apart from this there is another important point associated with the invention that is ..At any point of time, Administrator Risk Associated information for his chosen time for LCM.

Example – If an Administrator wants to trigger the Upgrade with his chosen time, then before triggering Upgrade for an application, he can generate a request to the OLA Agent and Manager to get the Risk Associated information with the Administrator chosen time.

Novelty Aspects:

1. Based on Administrator/Customer request, Predict the best possible time to go for an LCM operation for any given Entity in SDDC.

2. Dynamically identify the Entities that have "Available Upgrades" in SDDC and predict & propose a best possible time to trigger the Available Upgrades and also it will get the Risk Associated with respect proposed time. Example – If the Administrator triggers LCM with the ML proposed time, then how many users may feel performance impact or how many people may be users at the proposed time.

3. Dynamic Time-based LCM - Dynamically associate the Application that is triggered by Administrator to LCM when Administrator chooses the proposed or predicted time suggested by this invention.

4. Administrator Dynamically can get Risk Associated with any given time to LCM for an Entity.

   Example – If the Administrator wishes to find the Risks Analysis for a specific time, then he can simply send a request to the OLA Manager. ML Algorithms will give the Risk Associated with that particular time that administrator chose and send the details to Administrator.

3. Review from supervisor

Code needs to execute on live environments and parse the going logs instead of reading log files from gitlab repo.

Ravi Kottapalli
(Signature of Supervisor)

Date: 28 May 2021

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