**Project description:**

**An approach to provide analytics to optimize the activity within appliance:**

*Description: TO provide in-depth analysis of the activity being performed within the federated/non-federated appliance via scientific analysis of various short/long lived activities and benchmark the resource usage and the historical trend. This involves understanding the appliance activities initiated by resource manager and correlate with the existing performance benchmarking of the API/features.*

**Synopsis:**

1. **What is the problem?**

A software appliance based in java, consists of many services. These are multi-threaded and are highly resource centric. If these are not controlled properly, will cause failure. This failure will have a cascading effect and the whole appliance could fail. The problem is absence of any way of preventing the above described scenario, there is no way to get notified before the performance bottle neck actually happens.

1. **How is it proposed to be solved?**

The approach taken is to address the solution through a POC for which a sample activity within the software appliance is chosen (for example user management service) for the sake of POC. Monitoring performance indexes (CPU usage, memory used, I/O performed if any, processes created, threads formed etc) will help benchmarking the activities thus getting an idea about its normal resource usage. Notifying the eco system about thresh hold breach will thus be possible so that proper actions could be taken. Analytics can be developed based on the current and historical data of the collected metrics. These analytics can help in providing useful recommendations .Self-healing mechanisms could be thought of as a result of this analysis. Manual intervention can also be made highly beneficial by way of pin pointing the issue with greater accuracy. The performance key collection could be from OS or the hardware. The approach here is to use existing performance monitoring tool to collect those metrics data for further analysis and come out with recommendation if any.

1. **How will it help?**

It will help maintain the appliance health. It also will help tremendously in providing high availability of the appliance as failures due to performance bottlenecks are envisioned to be very low. The propose system would provide way to self-heal the issues during execution and would also generate alert for the admin to take action.