Virtual

Rae has illustrated SMaRT team and SMaRT business. Here I will bring SMaRT technology side to all of you, and see internally how SMaRT SRE platform to provide reliable service with high performance.

SMaRT SRE platform is built from scratch, this is the first time we use ECS and Flink Service to redesign SMaRT system, we also think it is the first time to use Flink Service to deliver responsive result in millisecond time in citi, even in Flink word.

we use micro service concept to design SMaRT SRE system(2.0), the whole system is running on ECS platform, all the service is deployed into ECS platform by light speed. The whole system is spited mainly into four parts, orchestration, we can also called access service (Rest service), which provide restful api to accept the client request, computing service, it is packaged into flink service.

Flink have two advantages: flink is a streaming platform, which can support a multiple operations in parallel, our SMaRT requests can be split as many smart rules, this rule can be executed separately on each flink node, after all the small rule is executed and they are aggregated one response by flink. And fink also provide configure parallism. If we think some flink operations are time consuming, we add assignment more recourse to the operation to reach our needs. At the current time, the most efficient communication channel between orchestrator and flink service, is Kafka service, we use gsp core team's Kafka to bridge the front end service and flink service. the next sub component is SMaRT cache service, it is also deployed into ECS, redis is really high performance component and can obvious reduce the whole system's response time, the last component is mongo service, which provide the auditing and report functionality, we save all the request and response into mongod db for latter auditing, and client can Brower report and metrcis from ui page, and the data is fetching from mongo service.

to summary,

ECS Container

SMaRT use lightspeed for devops, it can speed up our build and deployment.

SMART also use core team’s plaform: OAuth, Kafka Message System, RQ System.

Flink:

ORAAS and MAAS

SMART kernel components: RestService, RuleService, Redis Service, Mongo Service.

we draw the comparison between SMaRT 1.0 and SMaRT 2.0. Smart 1.0 use Physical server to deploy service, it is monolith service , all the component is formed into one service, and use factory to run the rule check, it use ML and Oracle to save data. it also use infinispan as cache , while in SmaRT 2.o, it is hybrid architecture, it is major in ECS,plus 8 VM. it is micro service architecture, and it is use flink to run rule check. The data is saved into mongodb, and Oracle, it use data center levels cache. for high availability, it is very high for Smart 1.0 it deployed into several nodes and use load balance to route the traffic to backend, so it has no single point filature issues, but for Smart 2.0, it is powerful and we enhance the HA in many factors not only load balance, we will cover it in later section. For performance, Smart 1.0 is serial rule engine, all the rules in the request is executed one by one. And in Smart 2.0 rules can be split and executed in parallel.

Since last August, we begin to design SMaRT system to meet the ICG level requirement, and we official publish the full new SMaRT System in this June. from the POC to real implementation, it takes us almost 9 month, we are experiment how to enhance high availibity , high performance and keep the data consistence for Smart system. Finally we almost overcome all issues and deliver SMaRT with high quality.

That is all for today’s sharing,

Any questions?

Thanks for your time again.