Case study platform exploration notes

1. App-A

Short description about the application:

Belonging to the business application service group, these groups of applications are mainly responsible for providing validation and code generation services to end users.

App-A provides validation service to customers of the application

It consists of three component services, a frontend management console and a management api (web application) used by the frontend and a backend api for end users.

Workload characteristic: Predictable workload in core backend api, low/infrequent workload in frontend and web application (management api)

WAF assessment if available: No

Potential Impact : Has good potential for energy reduction as there are areas to improve. Gateway service runs on VMs, some containers are under utilised.

Other applications within the business application group share similar architecture.

Feasibility of applying architectural changes: Feasible to make changes

1. App B

Short description about the application:

Messaging platform with no persistent storage. Legacy application

Workload characteristic: High volume, predictable workload

WAF assessment if available: See Well Architected Framework Sustainability assessment

Potential Impact : There are areas for improvement that can potentially yield great energy consumption reduction.

Feasibility of applying architectural changes: Difficult to make architectural changes, application is strongly dependent on third party and there’s so much limitation on changes that can be applied, e.g Autoscaling can’t be effectively done here because of the third party requirement.

1. App C

Short description about the application:

Is an event management platform for tracking and analysing all logistical events (for example, sorting message, delivery event, etc.). Previous version was running on a low code solution which runs on virtual machines. The application was completely rebuilt from scratch as a serverless application.

Workload characteristic: Very high volume, event driven, predictable workload.

Well Architected Framework (WAF) assessment if available: Not available

Potential Impact : This application is considered a green field application, highly optimised and maximises resources. It has also yielded massive cost reduction and resource usage optimization (and possibly energy consumption reduction).

There are less areas / potential areas to improve for energy consumption here.

Feasibility of applying architectural changes: Feasible to make changes if any.

Other notes:

Revamping the application reduced monthly running cost by ~50%,

Compressing database by adopting a gzip compression solution lowered database cost by 40%

1. App D

Short description about the application: Data warehouse solution for the case study platform

Workload characteristic: Very high, Predictable workload, has predictable high peak and low peak periods.

WAF assessment if available: No

Potential Impact : Well optimised application, hence less potential for energy improvement

Feasibility of applying architectural changes: Feasible to make changes

Other notes: DWH currently uses reserved instances with average utilisation of 70%.

Serverless solution for the data warehouse database has been tried before, it is lot more expensive because of the workload type - frequent

1. App E

Short description about the application:

It receives messages from producers, processes them, and forwards them to subscribed consumers. No application logic, No persistent storage.

Workload characteristic: High volume

WAF assessment if available: See Well Architected Framework Sustainability assessment

Potential Impact : This application is well optimised, utilises resources optimally and follows Well Architected Framework guidelines.

Feasibility of applying architectural changes: Possible to make changes if any but might be limited as only a small portion of this application is managed by the company