Anuket Pieman Release brings Energy Guidance and Closer Alignment with Kubernetes and Cloud Native Workloads

The Anuket team is pleased to announce that Pieman, the latest release of Anuket, a mature LF Networking project focused on reference models, architectures and testing tools, released May 14 2024 includes guidance for sustainability and closer alignment with the CNCF for Cloud Native infrastructures.

Anuket occupies a unique position in the telecom industry because it takes into consideration both operator and vendor requirements, having subject matter expert representatives who are very cognizant of the “real world” challenges of the industry. Anuket is being adopted as the reference infrastructure for other open source projects such as Sylva as well as part of the GSMA permanent document Reference Model as NG.126, Reference Architecture 2 (Kubernetes based) as NG.139, and Reference Architecture 1 (OpenStack based) as NG.133.

Reference Model (RM) highlights include:

- Updated contents in Hardware Infrastructure Manager section, aligning and referencing the Redfish standard. Prior to Pieman, Hardware Infrastructure Manager existed in RM as a concept only. Now, it can be implemented, e.g., using ODIM as a basis.
- Added load balancer into RM technology agnostic definition, aligned to RA2 PR #3415. It is based on a functional description, not on a specific implementation as typical load balancer technologies are defined.
- Started a technology agnostic guidance section to assist in planning more efficient open source based cloud infrastructure energy consumption. The RM focus is on the energy efficiency of the workload/infrastructure/management interactions. Energy savings are becoming a major issue for the telecom industry, with the massive use of data, energy efficiency and sustainability in the Hybrid, Multi-Cloud environment needs a consolidated approach by the ecosystem players.
- Added section on automated TLS certificate lifecycle management for workloads (from the infrastructure perspective).

Reference Architecture 2 (RA2) The RA2 project focuses on building a Kubernetes based architecture that now been consolidated into the most comprehensive industry wide set of specifications for Kubernetes Telco Cloud - acceptance as a GSMA standard is confirming this status.

- Added Express Data Path (AF_XDP) network acceleration specs, enabling faster and more efficient data plane traffic processing. This provides an agreed network acceleration implementation, which benefits all users with containerised data plane functions.
- Update to Kubernetes 1.29, including API specs and new functionality. Since PaaS services are essential operational add-ons to Kubernetes, which implement containerised network function monitoring, logging, traffic steering, etc.
- Add cert-manager for TLS certificate lifecycle management. A number of network functions require TLS certificates, this plugin allows management of their lifecycle automatically
- Add Load Balancer specs, for ingress traffic distribution across microservices. Load balancers steer traffic across the pods that compose containerised network functions. RA2 is specifying what is required of a load balancer to integrate with a Kubernetes based Telco cloud.

Anuket Overview

Anuket projects and work streams continued their efforts to strengthen container-based open infrastructure specifications and implementations. Some of other active projects include:

- Kubref - Project objectives is to develop and deliver a Kubernetes-based reference implementation according to the RA2 specifications in close collaboration with the RI2 and RC2 projects.
- Thoth -- Team is working to define a set of anonymized data models for AI, intelligent networking decision-making problems.
- Functest, functest-kubernetes -- A suite of functional tests for OpenStack and Kubernetes deployments, now includes support for CNTi Testsuite.