Cloud Native Technology Landscape

The following diagram depicts the Cloud Native Technology Landscape utilized by MonE platform. Please refer to L2 Architecture for details.

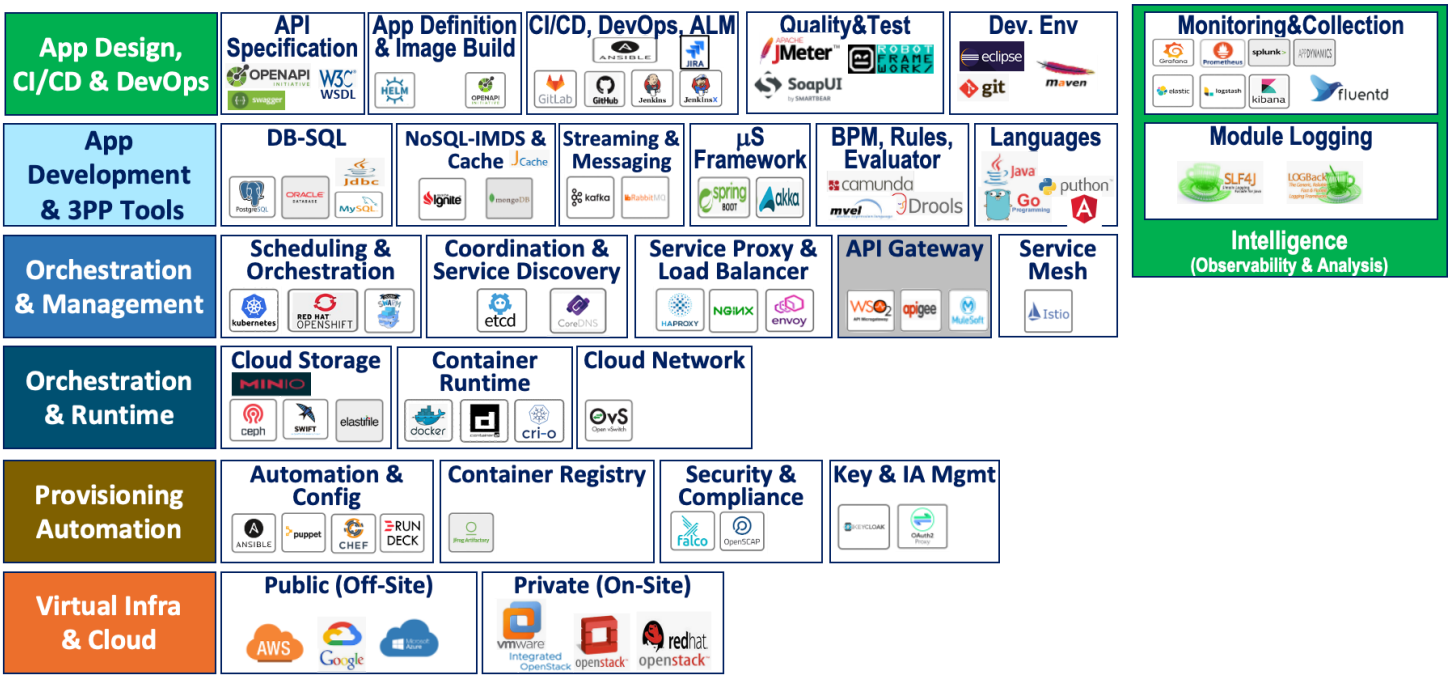

Figure-1: MonE Cloud Native Technology Landscape

The following list highlights some of the critical components of cloud native technology stack utilized by MonE.

ENTERPRISE CLASS APPLICATION DESIGN/DEVELOPMENT TOOLs

- **Identity and Access Management**: Keycloak is an open source Identity and Access Management solution aimed at modern applications and services.
- **API Manager**: WSO2 is an open source API Manager platform for integrating application programming interfaces, applications, and web services locally and across the Internet.
- **Database**: PostgreSQL, one of the World's most advanced open source relational database.
- **In-Memory Data Grid/Cache**: Apache Ignite enables JCache compliant full-featured distributed key-value data grid as well as JDBC API based access to memory grid.

- **Monitoring/Log Collection/Visualization**
  - **Operational LOGs**: Fluentd, Elasticsearch, Kibana
  - **KPI LOGs**: Prometheus, Grafana
  - **SLF4J/Logback**: Logging Frameworks used by MonE Components for Operational Logging

CLOUD/CONTAINERIZED WORKLOAD TOOLs

- **Kubernetes**: Kubernetes is a portable, extensible, open-source platform for managing containerized workloads and services, that facilitates both declarative configuration and automation. It has a large, rapidly growing ecosystem.
- **REDHAT OpenShift**: OpenShift is a family of containerization software developed by Red Hat. Its flagship product is the OpenShift Container Platform—an on-premises platform as a service built around Docker containers orchestrated and managed by Kubernetes on a foundation of Red Hat Enterprise Linux. MonE can be deployed on Kubernetes or OpenShift.
- **Docker/containerd**: The container runtime is the software that is responsible for running containers. Kubernetes supports several container runtimes: Docker , containerd, CRI-O , and any implementation of the Kubernetes CRI (Container Runtime Interface).

DEVELOPMENT FRAMEWORKs, CI/CD TOOLs

- **Angular**: Used by MonE UI components, Angular is a modern client centric, typeScript-based and open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations.
- **Spring Boot**: MonE back-end components utilize Spring Boot. Spring Boot is an open source Java-based framework mainly used to create a microservices ready for cloud. In general, it is developed by Pivotal Team and is used to build stand-alone and production ready spring applications as quickly as possible, with minimal upfront configuration of Spring.
- **Git**: Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.
- **Maven**: Apache Maven is a software project management and comprehension tool. Based on the concept of a project object model (POM), Maven can manage a project's build, reporting and documentation from a central piece of information.

- **Jenkins**: The leading open source automation server, Jenkins provides hundreds of plugins to support building, deploying and automating any project.
- **Nexus**: Expert flow control for binaries, build artifacts, and release candidates.
- **JUnit**: The programmer-friendly testing unit test framework for Java 8 and beyond.
- **SonarQube**: SonarQube is an open source platform developed by SonarSource for continuous inspection of code quality to perform automatic reviews with static analysis of code to detect bugs, code smells, and security vulnerabilities on 20+ programming languages.