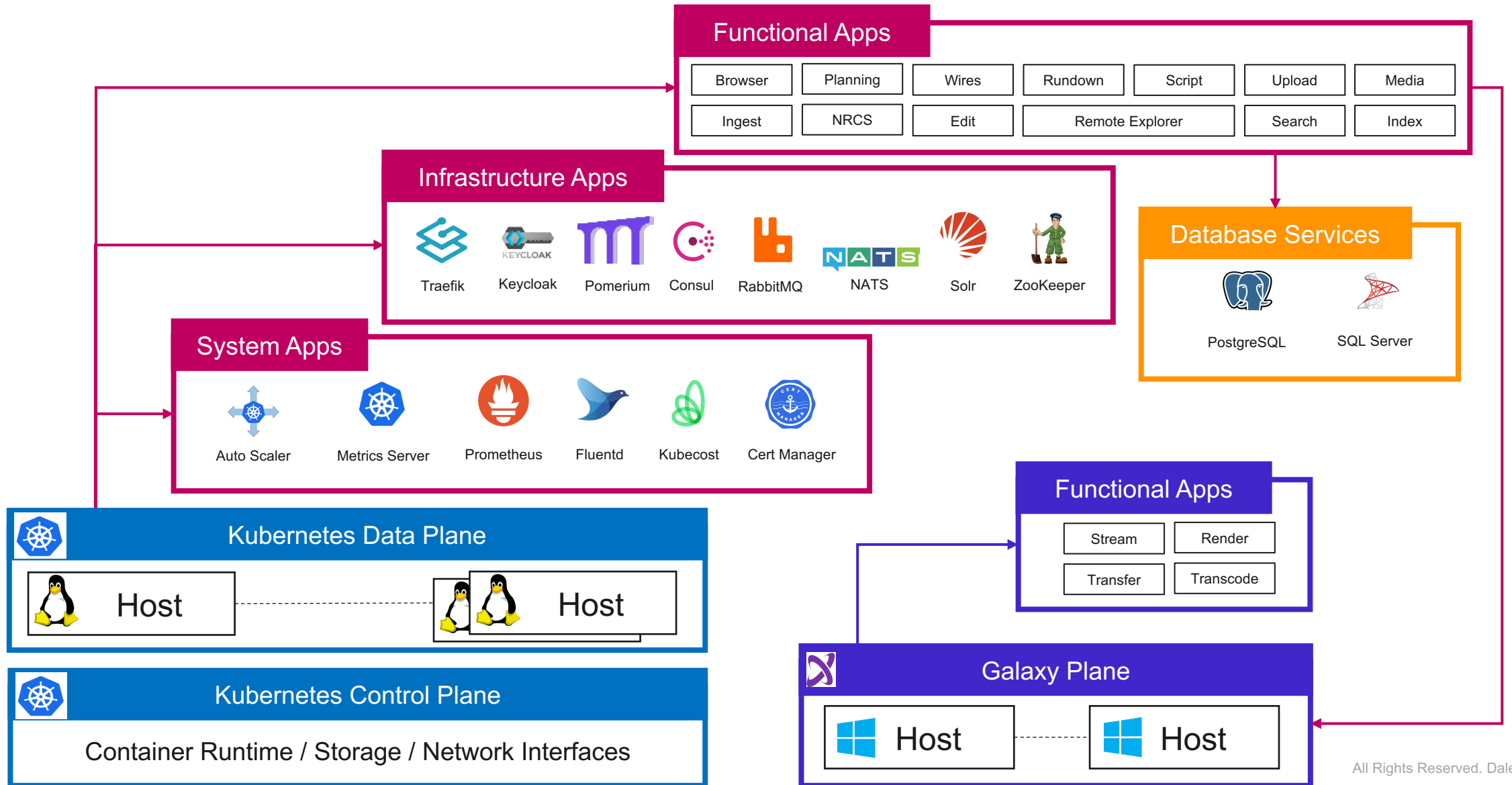




Dalet Pyramid: Software Architecture

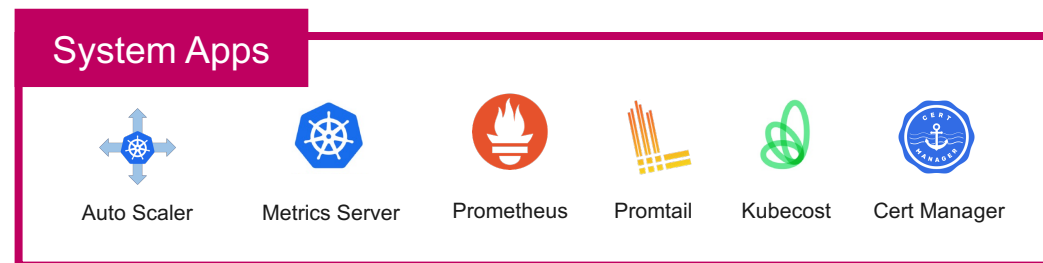
December 2022 – v1.1
CS Cloud Operations

Pyramid Architecture – Logical Overview

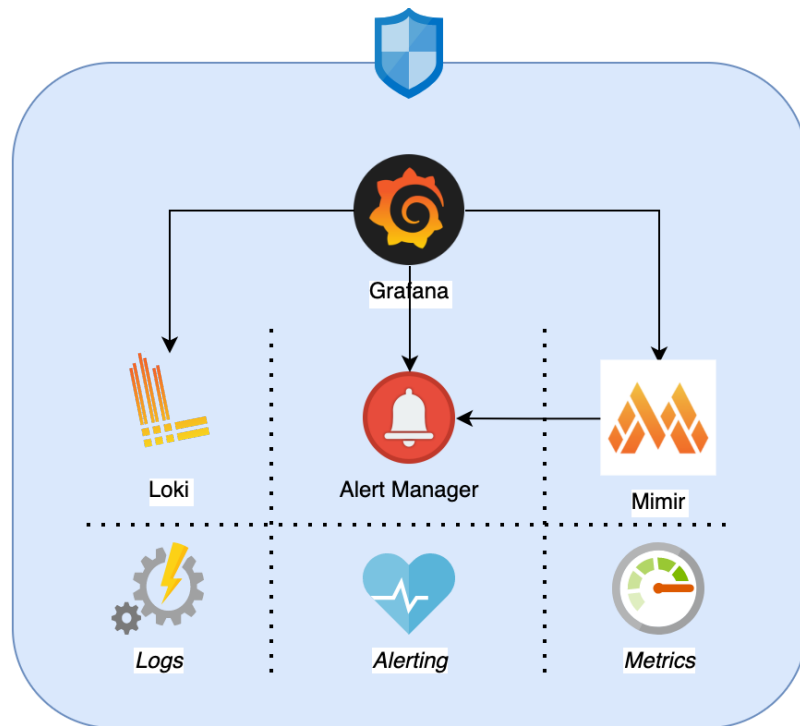


Pyramid System Apps Stack

- › **Cluster Auto Scaler**, a component that automatically adjusts the size of a Kubernetes cluster so that all pods have a place to run and there are no unneeded nodes. Allows for elasticity with mastered cost control.
- › **Metrics Server**, a scalable, efficient source of container resource metrics for Kubernetes built-in autoscaling pipelines, collecting resource metrics from Kubelets.
- › **Prometheus**, cloud-native reference monitoring system and time series database. Collects local cluster and app metrics for streaming to Dalet's Control Tower.
- › **Promtail**, a unified logging system, collecting events from various data sources before parsing and filtering them for streaming to Dalet's Control Tower.
- › **KubeCost**, a FinOps component, provides real-time cost visibility and insights.
- › **Cert Manager**, adds certificates and certificate issuers as resource types in Kubernetes clusters, and simplifies the process of obtaining, renewing and using those certificates.



Dalet Control Tower Observability



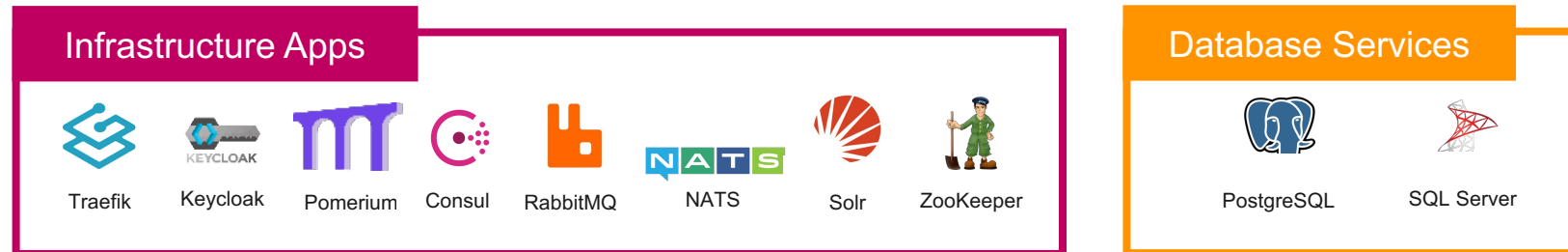
Dalet "Control Tower":
Administration & Observability Stack

- › A centralized, mutualized, monitoring and observability stack, daily managed by Dalet MOC and SOC teams to supervise customers platforms.
- › Pyramid applications expose their anonymized logs and metrics to a remote SaaS endpoint through HTTPS connection.
- › **Application Logs** offer a 90 days retention period.
- › **Metrics:**
 - Are gathered at infrastructure and application levels.
 - Collected through prometheus exporters every 15 seconds.
 - Are stored under **Mimir** time-series database for 90 days.
- › **Alerting:**
 - Are triggered by **Alert Manager**, over Prometheus metrics variations.
 - Trigger alerts through **PagerDuty** for 24x7x365 Dalet Ops incident management.



Pyramid Infrastructure Apps Stack

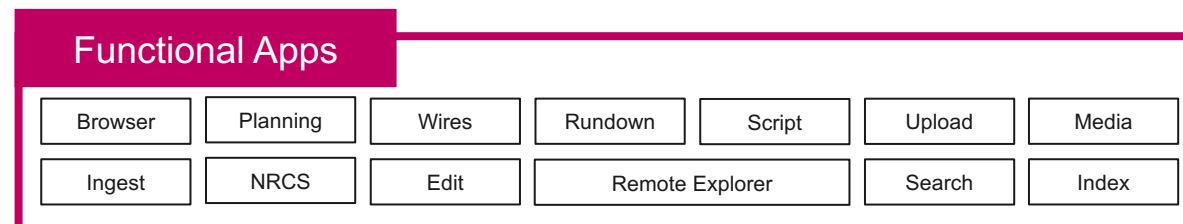
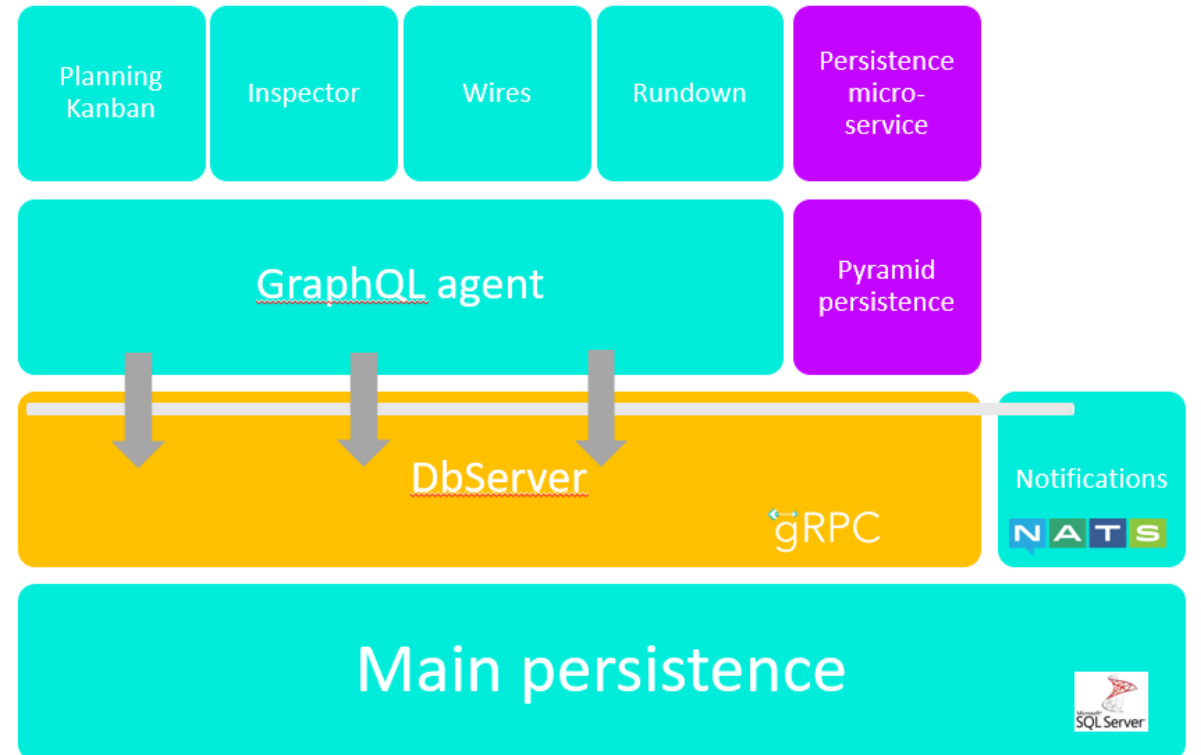
- › **Traefik**, an HTTP reverse proxy, load balancer and micro-services application router, acting as ingress controller for Kubernetes.
- › **Keycloak**, an identity and access management system, providing user federation, strong authentication, user management, and fine-grained authorization over AD , SAML and OpenID protocols.
- › **Pomerium**, an identity and context-aware reverse proxy that brokers secure access to apps and services at scale, used to provide a single-sign-on gateway to internal application and enforce dynamic access policy based on context, identity, and device identity.
- › **Consul**, a distributed and highly available solution to connect and configure applications across dynamic, distributed infrastructure.
- › **RabbitMQ**, an AMQP/MQTT messaging and streaming broker, used as a message queue between Pyramid applications.
- › **NATS**, a high-performance cloud-native messaging system used for Pyramid applications notifications.
- › **Solr**, a cloud-native distributed index and search engine.
- › **ZooKeeper**, a centralized service for maintaining configuration information, naming, providing distributed synchronization, and providing group services.
- › **PostgreSQL**, an object-relational database, used to store Pyramid's applications configuration.
- › **SQL Server**, a relational database, used to store user-generated content (stories, rundowns, ingest, archives ...)





Pyramid Functional Apps Stack

- A group of micro-services with persistent data that have a common lifecycle.
- AngularJS WebApps using single-page application principles.
- Using GraphQL backend API queries over NATS and gRPC to interface with Galaxy.





Thank you.

