

Dalet Flex: Software Architecture

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SERVICELEVELSANDS

Flex Architecture – Logical Overview



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Cloud Operations Management Network



- > Dalet Ops connect to private management network through:
 - Company-owned laptops
 - Using personal, revokable, nominative access
 - Authorized by Dalet's Identity Provider
 - Validated by Okta mobile-based MFA.
 - Using OpenVPN
- Customer Flex Environment VPC is:
 - Connected to Ops Management Network through VPC peering or site-to-site IPSec tunnel.
 - Accessible by Dalet Ops people through nominative SSH over VPN.
 - Deployed, upgraded, maintained and operated using Infrastructure as Code, through **Terraform** and **Ansible**, being 100% reproducible.
 - With sensitive information stored in secure vault.

Flex Ops Administration & Observability Stack



> Application Logs:

- All computing instances and application are configured to use Syslog sink with **FileBeat** extension for remote sending.
- Are sustained using a classic **ELK** infrastructure.
- Offer a 90 days retention period.

> Metrics:

- Are gathered at infrastructure and application levels.
- Collected through prometheus exporters every 60 seconds.
- Are stored under **Prometheus** time-series database for 90 days.
- Are analyzed and computing using Grafana.

> Alerting:

- Are triggered by Alert Manager, over Prometheus metrics variations.
- With **Xymon** extension for global status overview.
- Trigger alerts through **PagerDuty** for 24x7x365 Dalet Ops incident management (when Monitored / REM option has been subscribed)

Flex Application Stack

> Flex core architecture is:

- Micro-service oriented
- Using **Docker** images.
- Available through a private registry.
- Deployed over nodes using **docker-compose**.
- Both vertically and horizontally scalable.

> Flex media transcoding architecture (optional):

- Micro-service oriented as well.
- Container-based.
- Can rely on either:
 - Tradtional Virtual Machines infrastructure.
 - Kubernetes (k8s) infrastructure.
 - Absorbs elastic scale up/down for dynamic peak/burst and on-demand management.

Flex Core Infrastructure Stack

- MariaDB, persistent relational DB, used for core asset model, and other relational data structures including job management, resources, and permissions.
- > ArangoDB, persitent graph DB, used for metadata document storage, graph data structures such as taxonomies, thesaurus.
- > MongoDB, persistent non-relational DB, used for application audit events.
- Redis, volatile in-memory queue, used for distributed locks, caching, application local queues, other transient distributed application data.
- > ElasticSearch, persistent search engine, used for data indexing and searching.
- **RabbitMQ**, persitent queue, used for internal inter-service communications.
- Consul, service networking platform, used for internal inter-service discovery and environment specific configuration settings storage.

"Control Tower" Extended Monitoring

Data Storage Stack

- For cost-savings and better platform monitoring, Flex system can be connected to Dalet "Control Tower"
- A centralized, mutualized, monitoring and observability stack, daily managed by Dalet MOC and SOC teams to supervize customers platforms.
- Flex system exposes its anonymized logs and metrics to a remote SaaS endpoint through HTTPS connection.

Thank you.

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