Stratos: A Rich Web-based UI for Managing and Monitoring multi-cloud PaaS [TUT1268]

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Stratos

Managing and Monitoring multi-cloud PaaS
Stratos: A Rich Web-based Application for Managing and Monitoring multi-cloud PaaS
SUSE Cloud Application Platform

- SUSE Cloud Application helps to accelerate innovation by getting applications to market faster.
- Developers can get apps to the cloud in minutes instead of weeks.
- Lets Developers focus on code, not on how to deploy and scale applications.
SUSE Cloud Application Platform: Cloud Foundry

- Is a code-code-centric platform that helps to reduce application development cycles from months (or years) to days or weeks
- Is the prevailing open source cloud application platform
- Used by half of the Fortune 500 and a third of the Global 2000
- Makes it faster and easier to build, test, deploy and scale applications

https://www.cloudfoundry.org/cf-user-report-2018
SUSE Cloud Application Platform: Management

- Good tools are critical for Developers and Operators
- What tools are available to Developers and Operators to simplify their tasks and enable them to get things done more quickly?
- Can we add to the toolset?
Cloud Foundry CLI

Pros:
- CLI great for automation and scripting
- Tracks CF feature set

Cons:
- Requires client installation
- Not designed for browsing
- Slow to switch between orgs/spaces
- Slow to switch between Cloud Foundry clusters (one CF at a time)
- Hard to get insights (am I over quota?)
- No aggregated views
Stratos provides an easy-to-use web-based application that enables developers and administrators to manage their applications and Cloud Foundry deployment(s).
Stratos: Web-Based Management Application

- There was no standard UI for Cloud Foundry
- Created by SUSE
- Open-sourced in June 2017
- Proposed for Cloud Foundry incubation in December 2017
- Accepted as an incubated Cloud Foundry project in January 2018
- Growing community of users & contributors
- Aiming to graduate from incubation this year
Stratos: High-Level Features

- View Applications
- View, scale and manage Applications
- Deploy an Application
- SSH to Application instances
- Stream Application logs
- View and manage Orgs and Spaces
- Browse and search Service Catalog
- View, create and bind Services
- View Application metrics
- View Cloud Foundry metadata
- And more…
Stratos: Supports Multiple Cloud Foundry Clusters

- Manage multiple Cloud Foundry Clusters from a single Stratos
- Easily switch between them and access aggregated views of Applications
Stratos: Works with Any Cloud Foundry

- Stratos works with the public Cloud Foundry API, so it will work with any certified distribution
Stratos: High-Level Overview

Frontend (Angular 7)

- App Wall
- App Deploy
- Service Catalog
- Cloud Foundry Details
- App Details
- App SSH
- Log Viewer
- Endpoint Management

Backend (Go)

- Cloud Foundry Endpoint
- Cloud Foundry Endpoint
- Cloud Foundry Endpoint

Proxy API Request

- Auth Token
- Token refresh

Auth Token

API Response

API Request

UAA

Authentication Server

Endpoints + Encrypted Tokens
Stratos: High-Level Overview – Endpoints

• Users register endpoints (e.g., a Cloud Foundry cluster) with Stratos
• Users connect to each endpoint by specifying their credentials for that Cloud Foundry
• Stratos stores encrypted tokens for each endpoint
• Stratos front-end makes API requests to Cloud Foundry via the backend
• Stratos backend takes care of automatically refreshing authentication tokens and adding the token to the outgoing request to the endpoint
• Requests can be sent to multiple endpoints via a single API Request
Stratos: High-Level Overview – Extensibility

- Stratos is designed to be extensible and customizable
- Both front-end and back-end can be extended
SUSE Cloud Application Platform

- SUSE Cloud Application Platform containerizes Cloud Foundry
- Deployed to a Kubernetes cluster using Helm
SUSE Cloud Application Platform

- Developers can build and run applications in Cloud Foundry
- They can also build and run containerized workloads on Kubernetes
SUSE Cloud Application Platform: Multi-Cloud

- SUSE Cloud Application Platform can be deployed on a variety of Kubernetes distributions – some customers might have multiple deployments and configurations.
Extending Stratos to Support Kubernetes

• Extend Stratos beyond Cloud Foundry to provide a single pane of glass for managing applications and workloads in both Cloud Foundry and Kubernetes
Extending Stratos to Support Kubernetes

- We have added support for more types of endpoints
- Continuing to build out support for Kubernetes
Stratos and Cloud Application Platform Console

**Stratos**
- Open source
- Cloud Foundry Management UI
- Cloud Foundry incubated
- Includes support for optional Metrics stored in Prometheus
- Designed to be extensible

**Cloud Application Platform Console**
- Open source
- Builds on Stratos
- SUSE-branded
- SLE-based images
- Installed via Helm
- Extensions for:
  - Kubernetes
  - Helm

https://github.com/cloudfoundry-incubator/stratos  
https://github.com/SUSE/stratos
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Demo
DISCLAIMER:
Some of what I’m showing is in development. There is no commitment that this will make it into the product!
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Thank you
2.2.0: Extensions

- Allow users to fork Stratos and add their own customizations without having to modify core Stratos code
- This is not dynamic plugins
- Backend plugins
  - Add new endpoint types
  - Add custom APIs
- Frontend
  - Custom login screen
  - Customize about page
  - Custom theme
  - Add new side navigation items
  - Add tabs to Application and Cloud Foundry views
  - Add actions to App Wall, App, CF, CF Org, CF Space and Endpoints views
  - Using Typescript decorators for frontend extensions
Roadmap

• Application Deployment
  • GitLab support
  • Enterprise GitHub support
  • GitHub private repository support (user tokens)

• Scalability
  • Continue to improve responsiveness and usability with large # apps, services, orgs, spaces, users

• UAA User Management
  • Ability to manage users, clients, etc.

• User invitation to an Organization
  • Org Manager can send email invite to user to create an account and grant them access to a particular Org

• I18n (awaiting Angular 7)

• Services enhancements
  • JSON Schema support for Service Instance binding
  • Service Plans
  • Service Keys
  • Show Service plan cost visibility
  • ...
Roadmap

• Bring Orgs and Spaces views to top-level
  • Make Org/Space hierarchy easier to view and navigate

• V3 API Support
  • We currently do a lot of work to be as efficient as possible
  • Some aspects of the V2 API make this hard for our use cases
  • Some of the aspects of the V2 API that we use are currently not going to be available in V3
  • Need to work with CAPI/CLI team to understand Stratos use cases
  • More information here: https://github.com/cloudfoundry-incubator/stratos/blob/v2-master/docs/cf-api-v2-usage.md

• Snyk Integration
  • Ensure we have the extension points to enable this integration

• Visualize relationships or orgs/spaces/apps/services