Architectures are disaggregating
Snowflake architecture

*Incremental modifications over time makes it harder to replicate, creating a unique snowflake*

About me

Chintana Wilamuna
Director, Solutions Architecture @ WSO2
@std_err
Code first approach to create composite microservice apps
Hello world example
```bash
$ cellery init

? Project name:  [my-project] qconsf-2019

✓ Initialized project in directory:  /Users/chintana/qconsf-2019

What's next?

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Execute the following command to build the image:
$ cellery build qconsf-2019/qconsf-2019.bal organization/image_name:version

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✓ ~ % cd qconsf-2019/
✓ qconsf-2019 % ls
qconsf-2019.bal
✓ qconsf-2019 %  
```
Hello world cell definition

- Build and run functions
- Component - an existing container image
- Polygot - support multiple languages inside individual containers
- Abstraction of a composite
Pet store example
Pet store cell definition

- Communication between components
- Dependencies
- Just like container repo, cell repository (push/pull)
- Runtime view of cells
- Metrics
Edge security

1. Application
   - Auth2 Access Token/ Signed JWT by Trusted IDP/
     Client Certificate/ Any other credential

2. Global Gateway
   - Signed JWT Audience: hr

3. WSO2 API Manager
   - Authenticate and Policy Enforcement

4. Signed JWT Audience: hr

5. HR Gateway
   - Signed JWT Audience: hr

6. hr cell
Cell security

1. Call Cell gateway with a signed JWT
2. Validate JWT
3. Call STS to validate JWT
4. Validate JWT, Enforce Policies and extract user context information
5. Pass user context information as headers
6. HR Gateway

Signed JWT Audience: hr
Inter cell communication

1. hr Gateway
2. Call Cell STS to obtain a token
3. Cell STS issues a signed JWT with user context information
4. Signed JWT Audience: stocks
5. stocks Gateway
6. Validate signed JWT
7. Return user context information as headers
8. envoy

hr Cell

[Diagram of inter cell communication with labeled steps and components]
Cell-based reference architecture

Cell-Based Architecture

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Original Authors

- Asanka Abeyesinghe | Deputy CTO & VP of Architecture - CTO Office | WSO2, Inc | asankaa@wso2.com
- Paul Fremantle | CTO and Co-Founder | WSO2, Inc | paul@wso2.com

This document describes a reference architecture for modern agile digital enterprises. This reference architecture offers a logical architecture based on a disaggregated cloud-based model that can be instantiated to create an effective and agile approach for digital enterprises, deployed in private, public or hybrid cloud environments. In this paper we present the architecture, the approach to applying this architecture, and existing approaches that fit into this architecture. The architecture defined in this paper can be mapped to current architectures as well as used to define new architectures. It is designed to help move from the “as-is” towards the “to-be”.

Thank you!