

# Evolute Migrate

## AI-based Containerization

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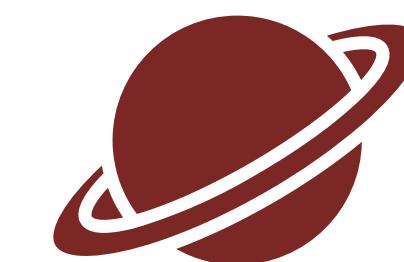


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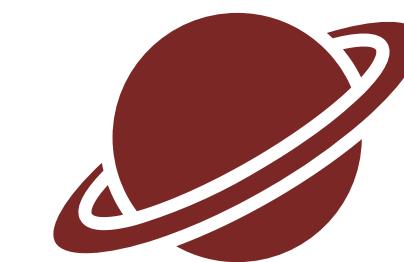


2445 Augustine Drive  
Santa Clara | CA | 95054  
United States

# Agenda

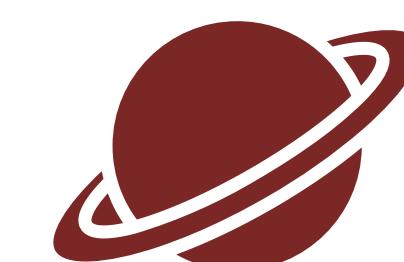


Overview



Evolute Migrate

- BCD Framework
- Demo



Scalability Patterns

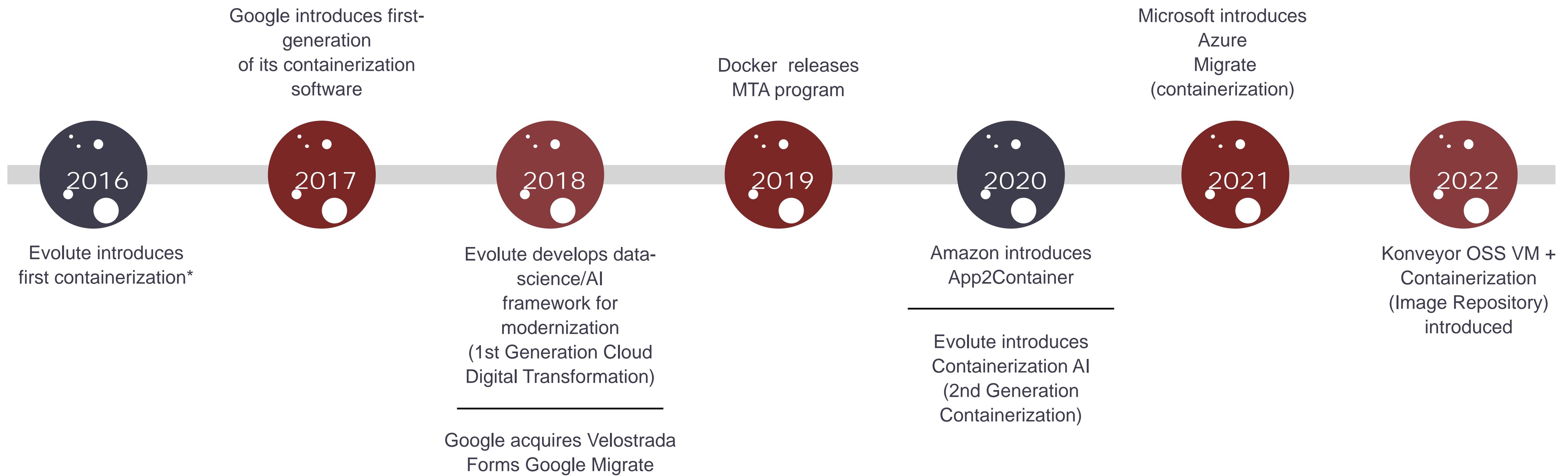
# Overview

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## History

# Timeline

## First and Most Comprehensive



\* USPTO 62797200

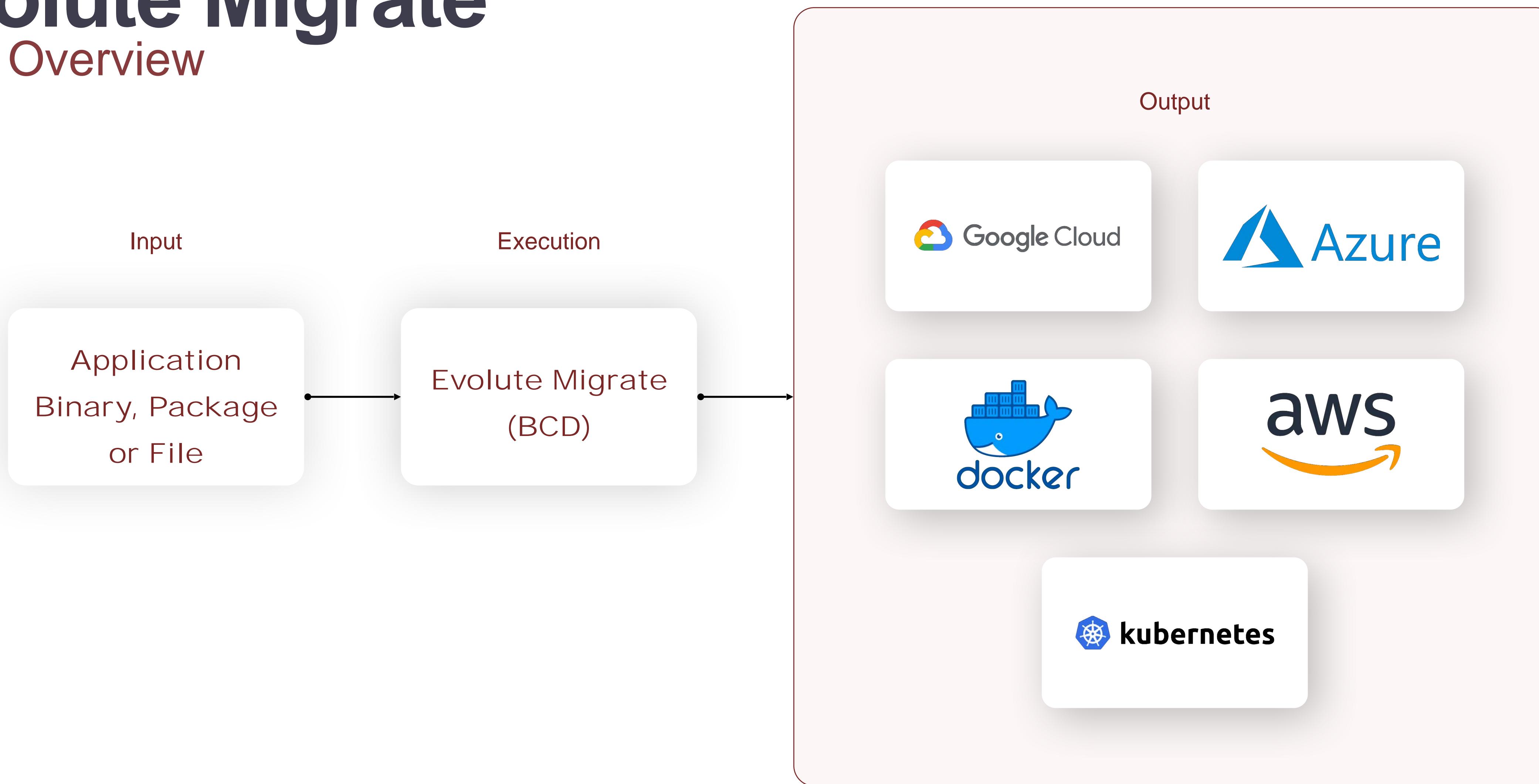
# Evolute Migrate

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BCD Overview

# Evolute Migrate

## BCD Overview



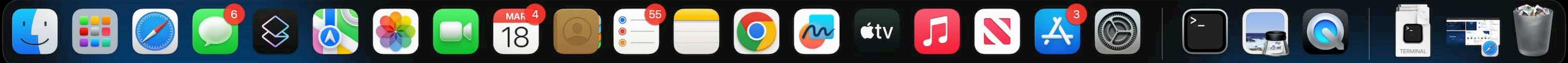
# Demo

kriss — root@evo-mgr-0009:~ — ssh evo-mgr-0009 -l ec2-user — 92x53

(p36) [root@evo-mgr-0009 ~]#

kriss — root@evo-gapps-0008:~ — ssh -l ec2-user guest-apps0008 — 107x53

[root@evo-gapps-0008 ~]#



# Evolute Migrate

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BCD Deep Dive

# AI Framework

BCD

## Classification

Leverages K-Means Clustering via  
Unsupervised ML

## Containerization

- Leverages Decision Trees via Supervised ML
- ~3100 Base Paths (OS, Classification Input, Output Artifact, Destination Platform)

## Runtime

- Run In Any Target Docker/K8S Platform
- Start Services
- Separate Components

# Evolute Migrate Model

BCD - Binary Configuration Data



## CLASSIFICATION

Binary, Package or File

Example binary - mysqld

Example package -  
ftp-0.17-67.el7.x86\_64.rpm

Example binaries(nginx, mssql,  
customer vendor software)

PROFILE



## CONFIGURATION

Binary Configuration Data Mapping

Software Language Evaluation

Library and  
Dependencies Mapping

OS Source and Destination  
Mapping

Software Static and Dynamic  
Variable Analysis

Storage and Data Transformation

TRANSFORM



## CONTAINERIZE

Properly Instantiate

Separate Services

Start Order

Proper Clustering

Scalability

RUN

# Evolute Migrate

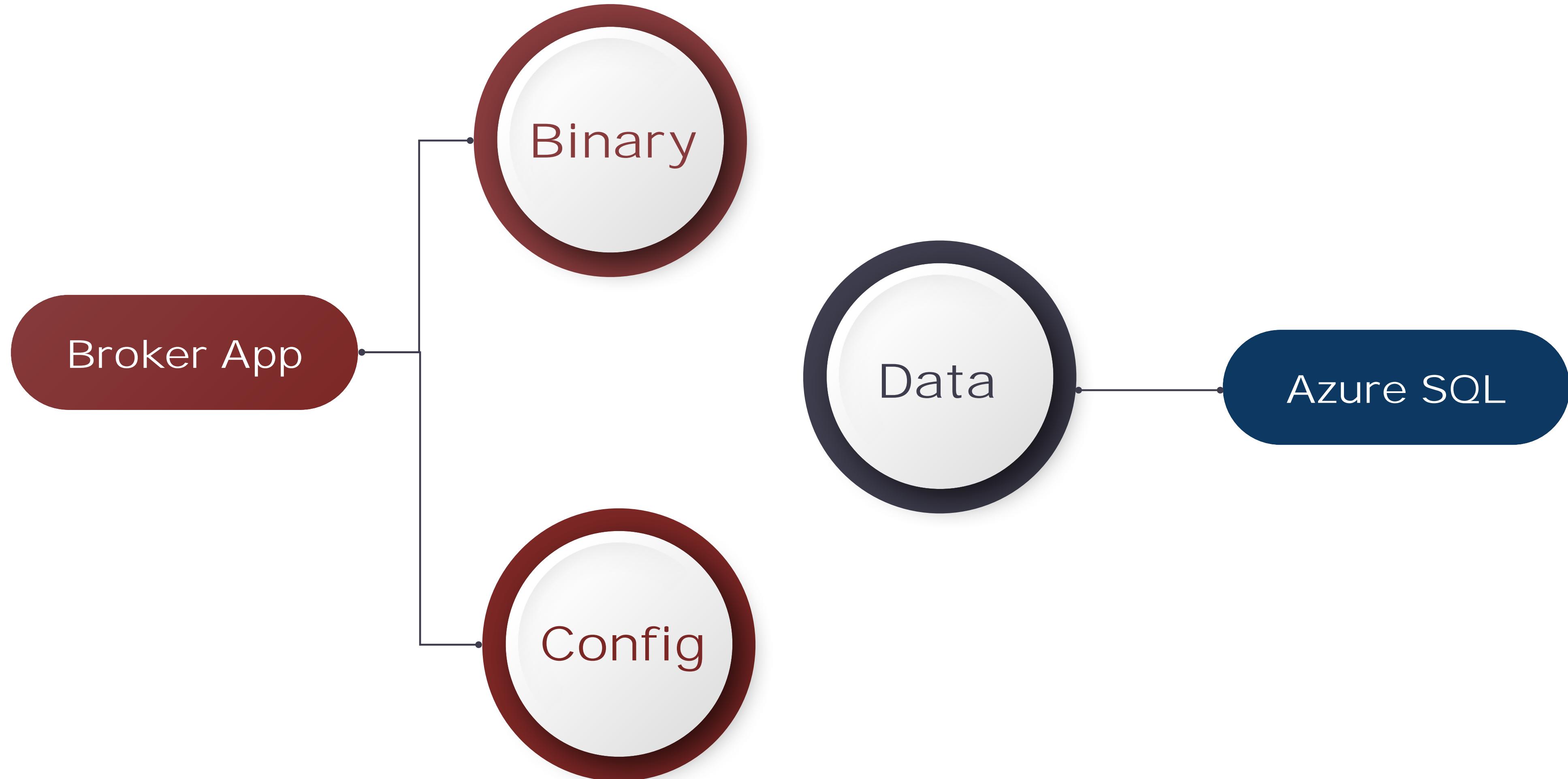
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Example App

In-House Developed Software

# Evolute Migrate

## Example Software



Note: Not all components are depicted (e.g. client side software, serverless API, et al)

# Evolute Migrate

## Software Manifest

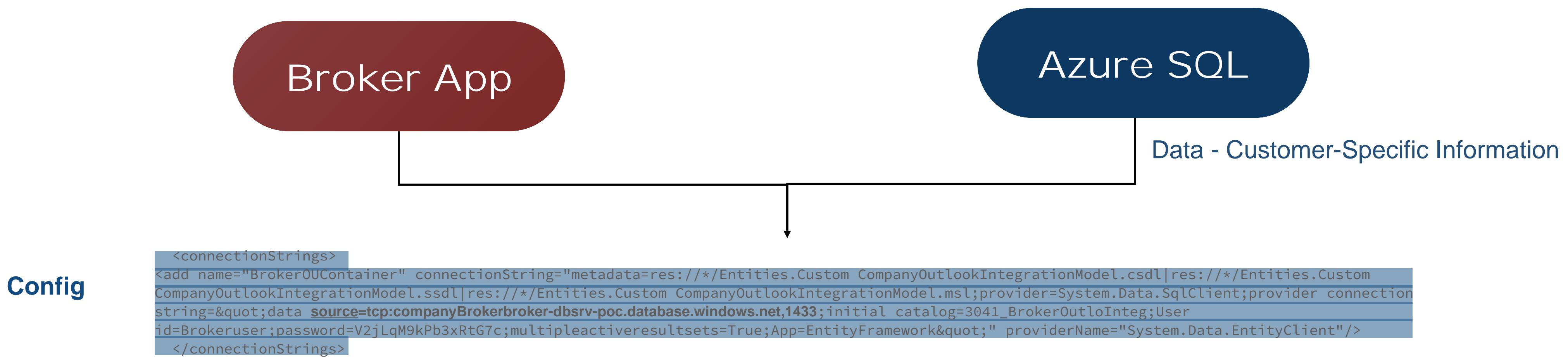
Broker App

- Binary - Software Runtime
- Configuration - Unique Variables Make Instance Unique

```
1. FROM mcr.microsoft.com/windows/servercore:ltsc2022
2. SHELL ["cmd", "/c"]
3.
4.
5. # Runtime dependencies
6. ADD ["https://download.microsoft.com/download/9/3/F/93FCF1E7-E6A4-478B-96E7-D4B285925B00/vc_redist.x64.exe", "C:\\\\msvcrt-2015-x64.exe"]
7. RUN C:\\msvcrt-2015-x64.exe /quiet /install /wait && del C:\\msvcrt-2015-x64.exe || exit 0
8. ADD ["https://download.microsoft.com/download/9/3/F/93FCF1E7-E6A4-478B-96E7-D4B285925B00/vc_redist.x86.exe", "C:\\\\msvcrt-2015-x86.exe"]
9. RUN C:\\msvcrt-2015-x86.exe /quiet /install /wait && del C:\\msvcrt-2015-x86.exe || exit 0
10.
11. # Application: Broker Services
12. RUN md "C:\\Program Files (x86)\\Custom Company" || exit 0
13. COPY ["C\\\\\\Program Files (x86)\\\\\\Custom Company\\\\\\Broker Services", "C:\\\\Program Files (x86)\\\\\\Custom Company\\\\\\Broker Services"]
14. RUN sc create "BrokerService" binpath="\"C:\\Program Files (x86)\\Custom Company\\Broker Services\\Custom Company.OutlookIntegration.BrokerService.exe\"" start=auto DisplayName="Broker Broker Service"
15.
16. # Setup/Create MSMQ Queues
17. SHELL ["powershell", "-command"]
18. RUN Set-Item Env:PSModulePath -Value 'C:\\Windows\\system32\\WindowsPowerShell\\v1.0\\Modules;C:\\Program Files\\WindowsPowerShell\\Modules;C:\\Users\\ContainerAdministrator\\Documents\\WindowsPowerShell\\Modules'
19.
20. RUN Install-WindowsFeature MSMQ-Services
21. RUN New-MsmqQueue -Name "broker" -Label "broker" -QueueType Private -Transactional | Set-MsmqQueueAcl -UserName "Everyone" -Allow FullControl
22. RUN New-MsmqQueue -Name "booking" -Label "booking" -QueueType Private -Transactional | Set-MsmqQueueAcl -UserName "Everyone" -Allow FullControl
23. RUN New-MsmqQueue -Name "messageprocessor" -Label "messageprocessor" -QueueType Private -Transactional | Set-MsmqQueueAcl -UserName "Everyone" -Allow FullControl
24.
25.
26. #Create Services
27. SHELL ["cmd", "/c"]
28. RUN sc create "DataPullService" binpath="\"C:\\Program Files (x86)\\Custom Company\\Broker Services\\Custom Company.OutlookIntegration.DataPullService.exe\"" start=auto DisplayName="Broker Data Pull Service"
29. RUN sc create "MessageProcessorService" binpath="\"C:\\Program Files (x86)\\Custom Company\\Broker Services\\Custom Company.OutlookIntegration.MessageProcessorService.exe\"" start=auto DisplayName="Broker Message Processor Service"
30. RUN sc create "DataWriterService" binpath="\"C:\\Program Files (x86)\\Custom Company\\Broker Services\\Custom Company.OutlookIntegration.DataWriterService.exe\"" start=auto DisplayName="Broker Data Writer Service"
```

# Evolute Migrate

## App Config (Example)



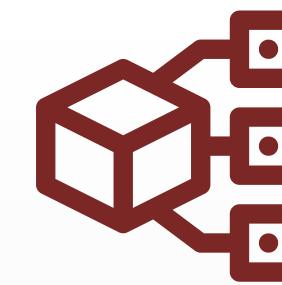
# Architecture + Scalability

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## Scalability Patterns

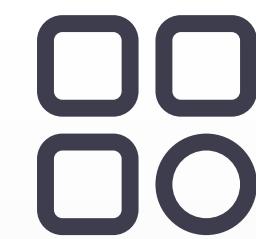
# Scalability Patterns

## Deterministic Architectures



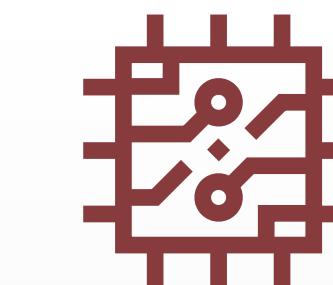
### By Application Function

ex: Shopping Cart function on e-commerce app



### By Resource Demand

ex: component requiring more hardware/network resources

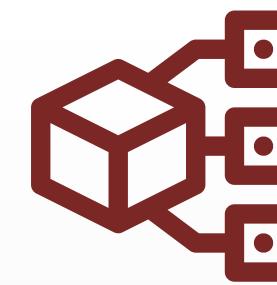


### By Component

ex: nginx package installed on OS

# Scalability Patterns

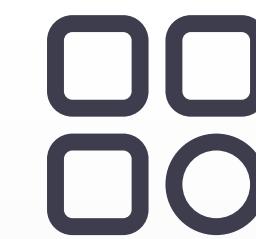
## Deterministic Architectures



### By Application Function

Scalability Pattern:  $m \times n$

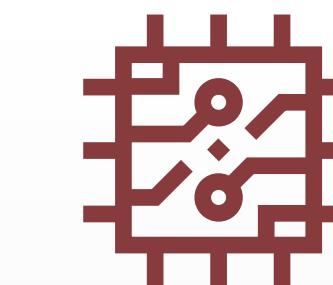
Implementation: e.g.,  
**Deployments + Services**



### By Resource Demand

Scalability Pattern:  $n+1$

Implementation: e.g. **Pod Autoscaler**



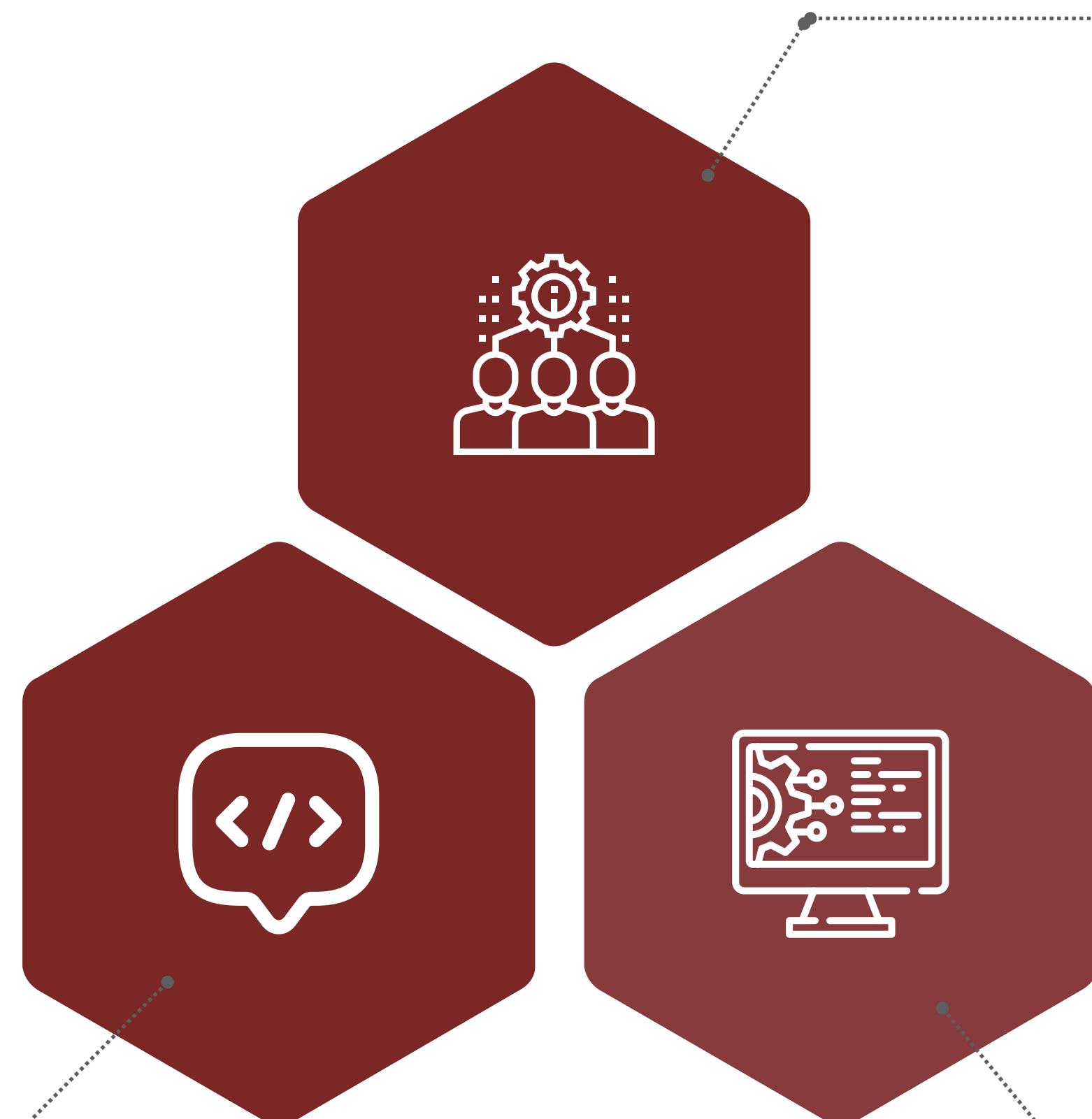
### By Component

Scalability Pattern:  $n+1$

Implementation: e.g.,  
**Deployment Count**

# Scalability Patterns

## A Few Computational Truths



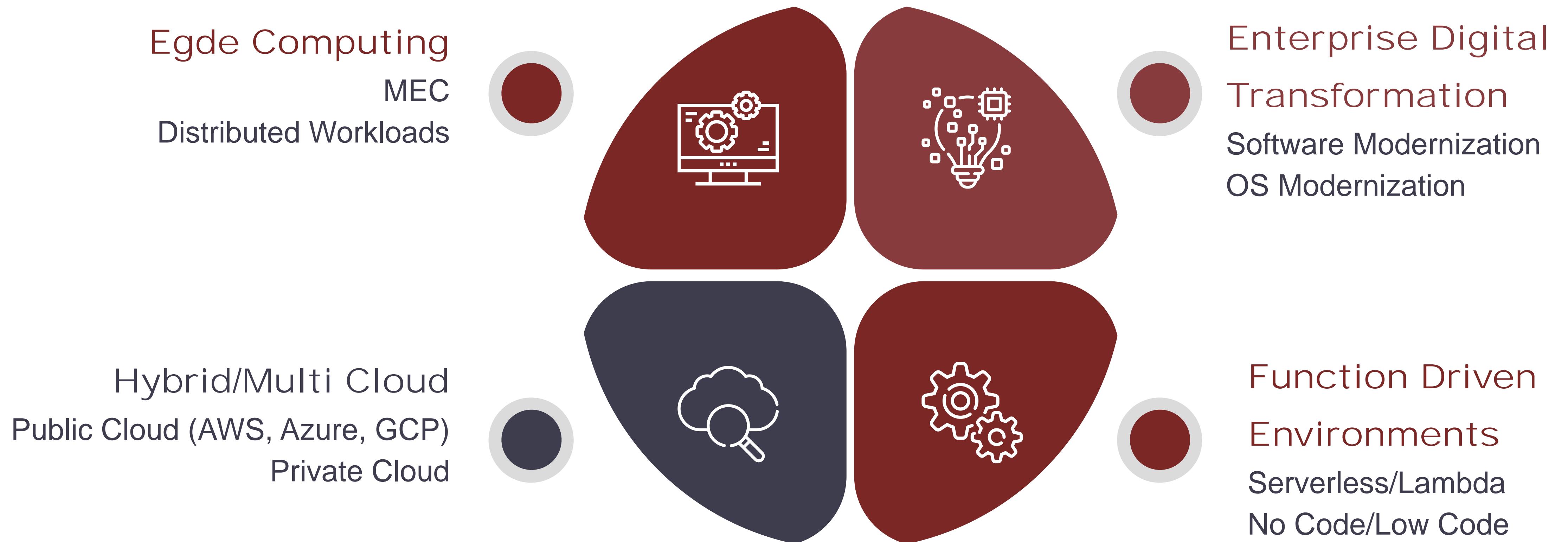
Communication  
expresses Relationships

Everyone respects OSI

Operating Systems  
are abstractions

# Scalability Patterns

## Use Cases



# Thank You

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CONTACT US TO  
LEARN MORE!