



傳統 Web-Based 應用程式往原生雲應用程式之移轉  
以 Cloud Foundry 實作分享

Jul 12, 2016  
張宇華

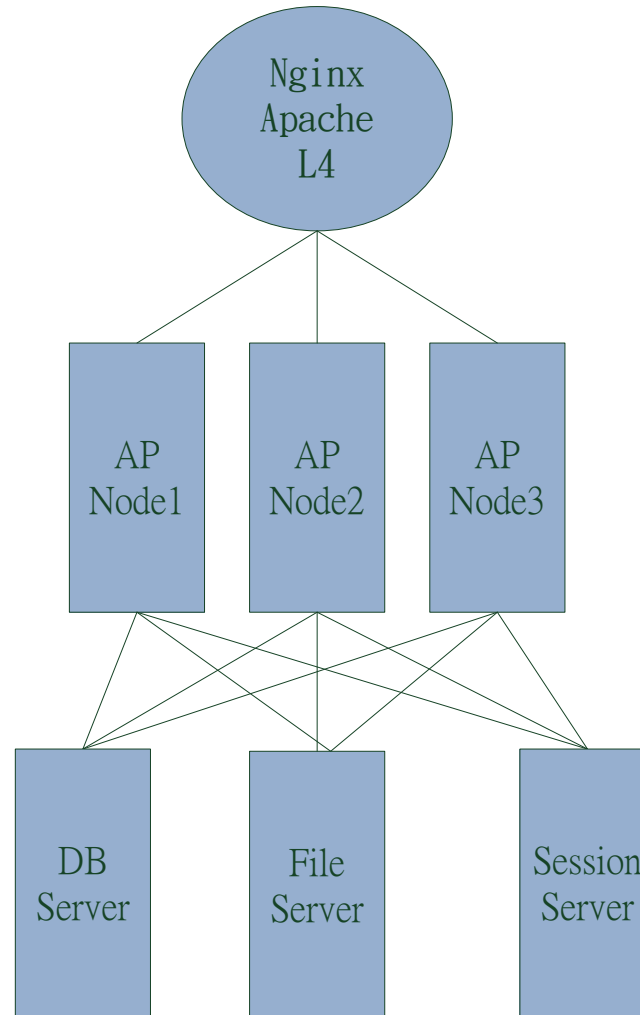


# 大綱

- 傳統Web-Based應用程式架構
- NIST雲端運算特徵
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- Docker
- The Cloud Foundry Architecture
- HPE Helion Stackato Overview
- 實作及Demo



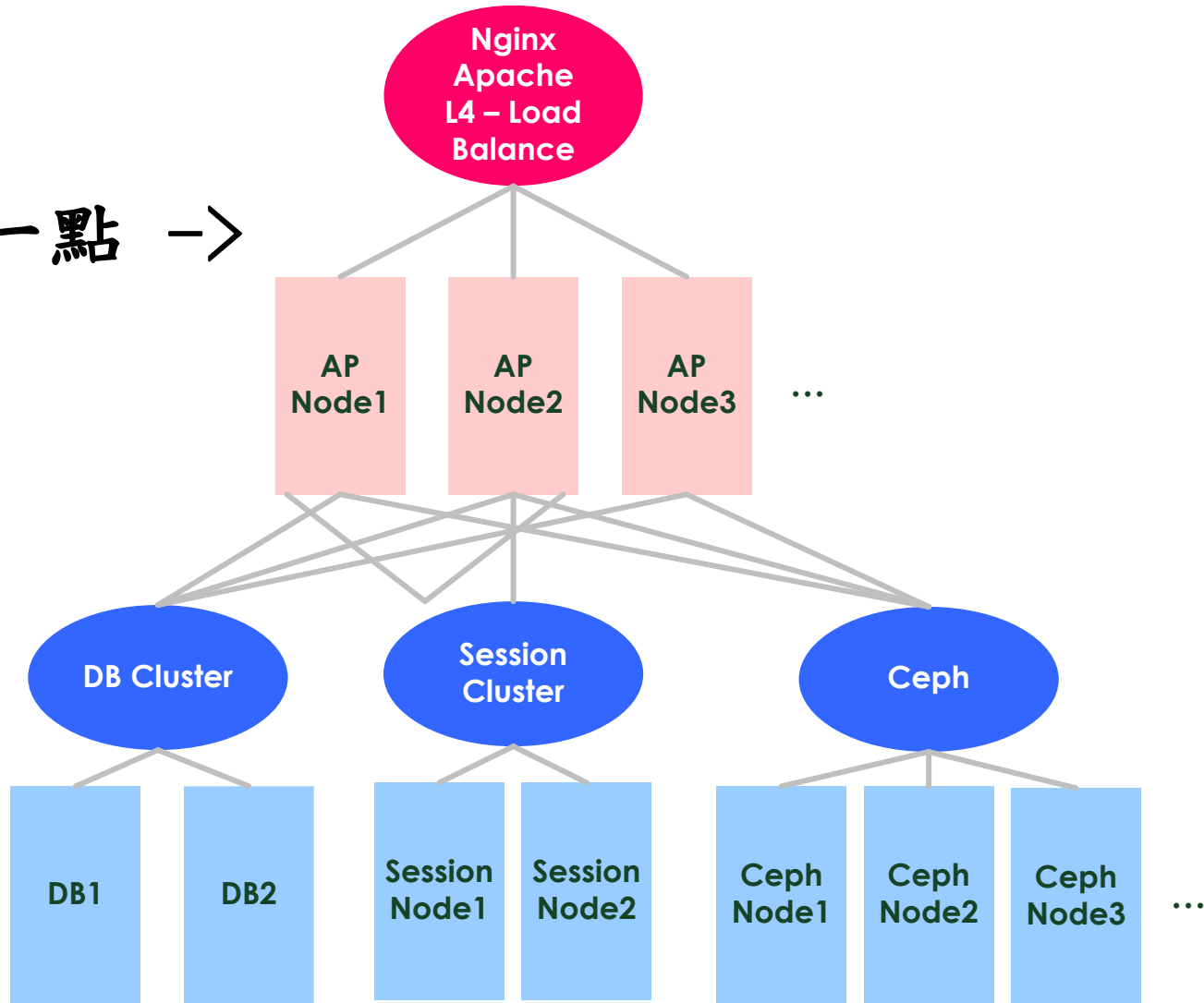
# 傳統Web-Based應用程式架構





# 傳統Web-Based應用程式架構

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# 傳統Web-Based應用程式架構

- 前面不管是複雜或是簡單的應用架構，統統得由專業的架構師／開發設計人員來處理
- 資源的調度，很不彈性
- 無法確保服務水準



# 傳統Web-Based應用程式架構

- 為了解決問題
  - Cloud Foundry
    - HPE Helion Stackato
  - Rancher
  - DC/OS
  - Docker Swarm / SwarmKit
  - Kubernetes
  - ....



# NIST雲端運算特徵

- 隨需應變自助服務(On-demand Self-service)
  - 消費者可依據使用需求狀況自行使用雲端服務，不需再透過雲端供應者與之互動。
- 網路使用無所不在(Broad Network Access)
  - 網路使用無所不在，亦即雲端供應者服務可隨時在網路取用，且使用者端無論大小，均可透過標準機制使用網路。



- 共享資源池(Resource Pooling)
  - 資源彙整讓雲端供應者透過多租戶模式(Multi-tenancy)服務消費者，依據消費者要求，來指派或重新指派實體及虛擬資源，在所在地獨立性的概念下，消費者通常不知道所有資源確切位置，只可能掌握國家、州或資料中心等大範圍區域地點。其中資源包括儲存、處理、記憶、網路頻寬和虛擬機等。





## NIST雲端運算特徵 Cont.

- 快速重新佈署靈活度(Rapid Elasticity)
  - 彈性亦即能因應需求彈性且快速調整資源規模大小，對消費者而言，所提供的這種能力似乎是無限的，可以在任何時間被購買任何數量。
- 服務可計算(Measured Service)
  - 計算服務量測中，雲端服務各層次均由雲端供應者掌控與監管，這對於計費、存取控制、資源優化、處理能力規畫及其他工作相當重要，確保資源使用可被監測、被控制和被報告，為供應者和消費者雙方提供透明化服務使用資訊。



# 12 Factors

- 1. Codebase
  - One codebase tracked in revision control, many deploys
- 2. Dependencies
  - Explicitly declare and isolate dependencies
- 3. Config
  - Store config in the environment
- 4. Backing Services
  - Treat backing services as attached resources



## 12 Factors Cont.

- 5. Build, release, run
  - Strictly separate build and run stages
- 6. Processes
  - Execute the app as one or more stateless processes
- 7. Port binding
  - Export services via port binding
- 8. Concurrency
  - Scale out via the process model



## 12 Factors Cont.

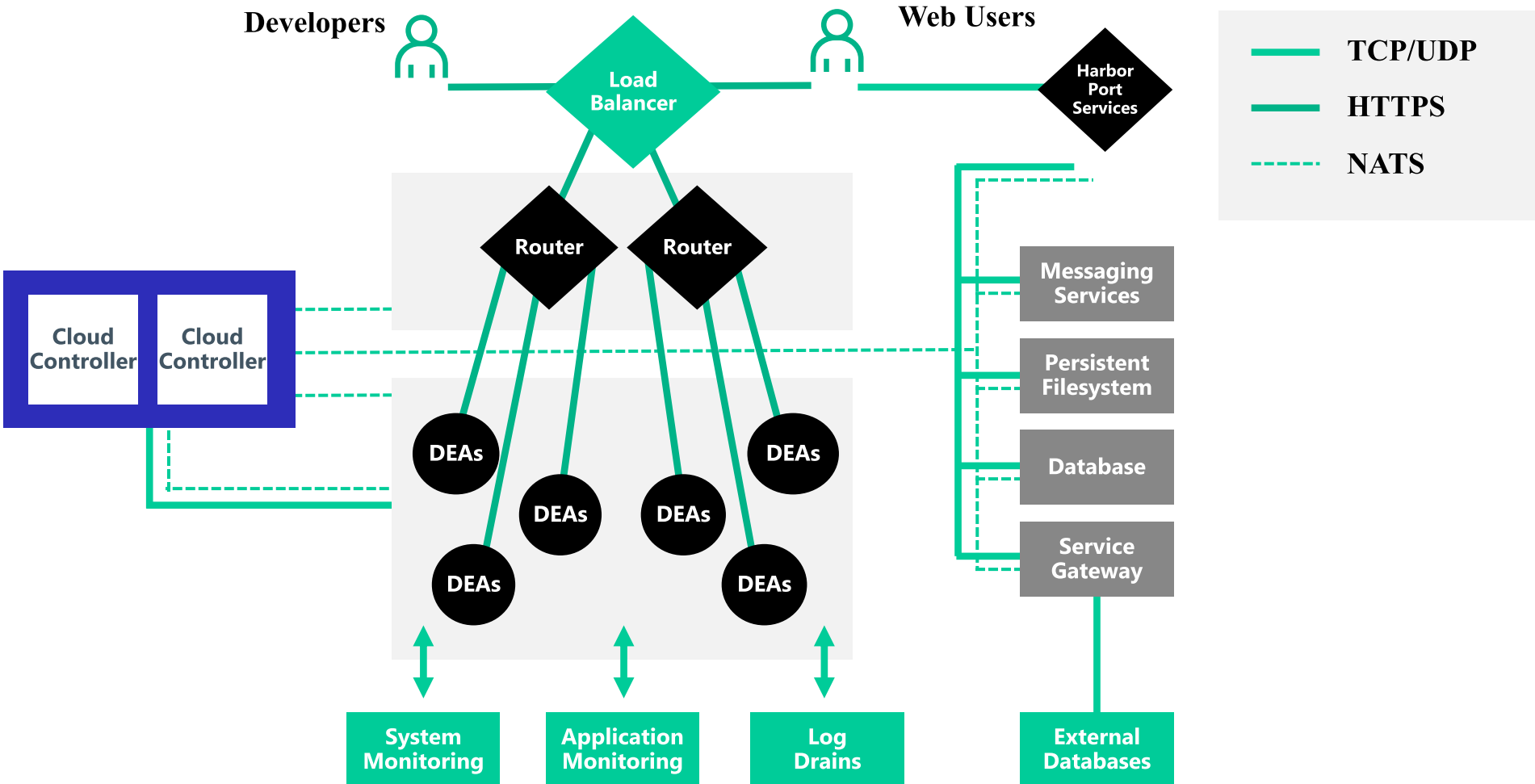
- 9. Disposability
  - Maximize robustness with fast startup and graceful shutdown
- 10. Dev/prod parity
  - Keep development, staging, and production as similar as possible
- 11. Logs
  - Treat logs as event streams
- 12. Admin processes
  - Run admin/management tasks as one-off processes



- Docker透過Container技術可以將任何小程式打包成可獨立執行的映像檔，發布到任何可執行Docker的平臺上執行。
- 降低原生雲應用程式的開發難度



# The Cloud Foundry Architecture





# HPE Helion Stackato Overview

## Software-as-a-Service Layer APPLICATIONS

- Faster time to market
- Productivity and innovation
- Cost reduction

## PLATFORM-AS-A-SERVICE LAYER Auto-Provisioning, Configuration, & Scaling of Application Middleware



### APP SERVICES

Data & Messaging Services



MySQL



## INFRASTRUCTURE-AS-A-SERVICE LAYER



Develop in  
Any Language

Run on  
Any Cloud

### A PaaS for IT & Developers

- Developers don't manage plumbing
- Enables self-service deployment
- Automatic scaling

Basic compute, storage, networking,  
VM automation only



## Practice :

- Step 0: Create Application Cluster
- Step 1: Download and Install the CLI
- Step 2: Logon the Cluster with CLI
- Step 3: Push your app
- Build Tool Integration
  - Eclipse Cloud Foundry Plugin
  - Visual Studio Cloud Foundry Plugin





# Logon the Cluster with CLI

```
Windows PowerShell
著作權 <C> 2015 Microsoft Corporation. 著作權所有，並保留一切權利。

PS C:\Users\clive> helion target api.als.kangdainfo.com
SSL warning for "api.als.kangdainfo.com": self signed certificate
Successfully targeted to [https://api.als.kangdainfo.com]
SSL warning for "aok.als.kangdainfo.com": self signed certificate
Resetting current org, invalid value.
Resetting current space, invalid value.
Target:      https://api.als.kangdainfo.com
Organization: <none>
Space:       <none>
PS C:\Users\clive> helion login
SSL warning for "api.als.kangdainfo.com": self signed certificate
SSL warning for "aok.als.kangdainfo.com": self signed certificate
Attempting login to [https://api.als.kangdainfo.com]
Username: clive.chang@kangdainfo.com
Password:
Successfully logged into [https://api.als.kangdainfo.com]
clive.chang@kangdainfo.com Choosing the one available organization: "org1"
Choosing the one available space: "default_space"
Target:      https://api.als.kangdainfo.com
Organization: org1
Space:       default_space
PS C:\Users\clive>
```

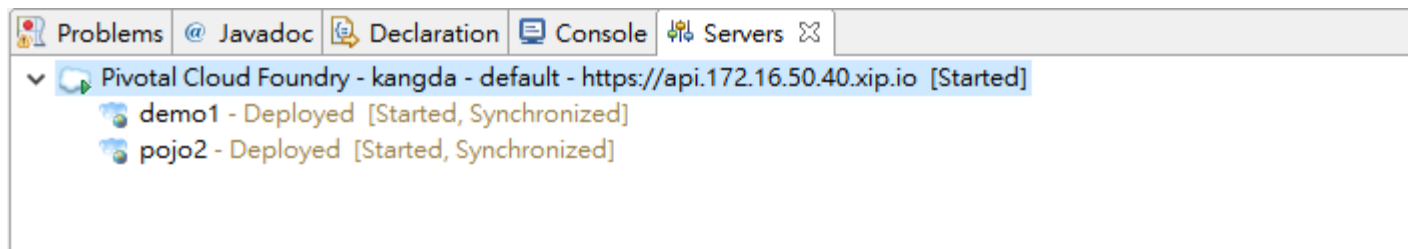
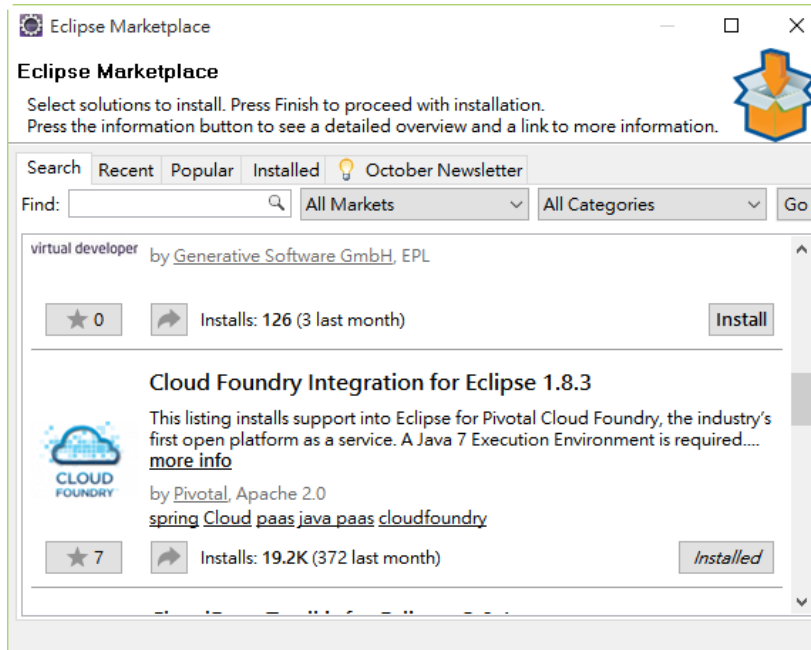


# Push Application

```
Windows PowerShell
PS D:\MyCases\RDCases\common_hibernate4> helion push
SSL warning for "api.als.kangdainfo.com": self signed certificate
Would you like to deploy from the current directory ? [Yn]: Y
Using manifest file "manifest.yml"
Application Deployed URL [pojo4.als.kangdainfo.com]:
Application Url: http://pojo4.als.kangdainfo.com
Enter Disk Reservation [2048]: : 512
Creating Application [pojo4] as [https://api.als.kangdainfo.com -> org1 -> default_space -> pojo4] ... OK
Map http://pojo4.als.kangdainfo.com ... OK
Create services to bind to 'pojo4' ? [yN]: N
Uploading Application [pojo4] ...
  From path D:\MyCases\RDCases\common_hibernate4\WebContent
  Checking for bad links ... OK
  Copying directory
  Copying to temp space ... OK
  Checking for available resources ... OK
  Processing resources ... OK
  Packing application ... OK
  Uploading (4M) ... OK
Push Status: OK
Starting Application [pojo4] ...
OK
http://pojo4.als.kangdainfo.com/ deployed
PS D:\MyCases\RDCases\common_hibernate4>
```



# Eclipse Plugin





# Visual Studio Plugin

Stable Only Sort by: Relevance

Cloud Foundry MSBuild Tasks  
Cloud Foundry MSBuild Tasks

Iron Foundry vcap-client  
The .NET vcap-client for Cloud Foundry from the Iron Foundry Team.

Foundry  
.NET Test Factory

Lokad.Cloud.AppHost.Framework  
Lokad.Cloud AppHost Prototype - Framework

Lokad.Cloud.AppHost  
Lokad.Cloud AppHost Prototype - Host

Cloud Foundry

Created by: Hewlett-Packard Development Company, L.P.

Id: cf-msbuild-tasks

Version: 1.3.0.14

Last Published: 2015/9/14

Downloads: 890

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Description:  
Cloud Foundry MSBuild Tasks

Tags: cloud foundry cloudfoundry net .net dotnet msbuild tasks helion

Dependencies:  
*No Dependencies*

Cloud Foundry Explorer

Kang Da - ALS 1.2.6 (clive.chang@kangdainfo.com)

Kang Da - ALS 1.3 (clive.chang@kangdainfo.com)



# References

- **OpenStack.org**
  - <http://docs.openstack.org>
- **HP Helion Documents**
  - <http://docs.hpcloud.com>
- **The Twelve-Factor App**
  - <http://12factor.net>
- **Pivotal Cloud Foundry**
  - <http://docs.cloudfoundry.org>
- **iThome**
  - <http://www.ithome.com.tw/news/95752>
- **雲端開發測試平台**
  - <https://www.cloudopenlab.org.tw>