



IBM 2019  
**Cloud**  
& **AI** 高峰會

# 多雲管理 MultiCloud Managment

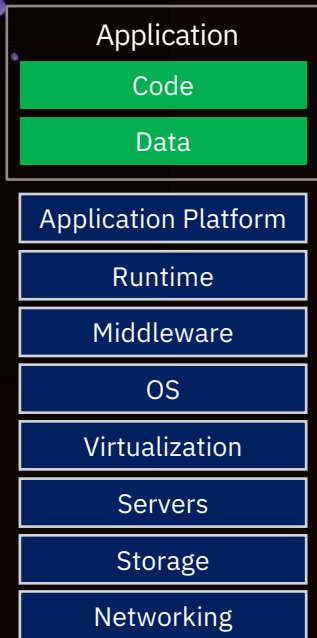
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Rick Huang  
Senior IT Specialist

# 為何需要多雲環境?

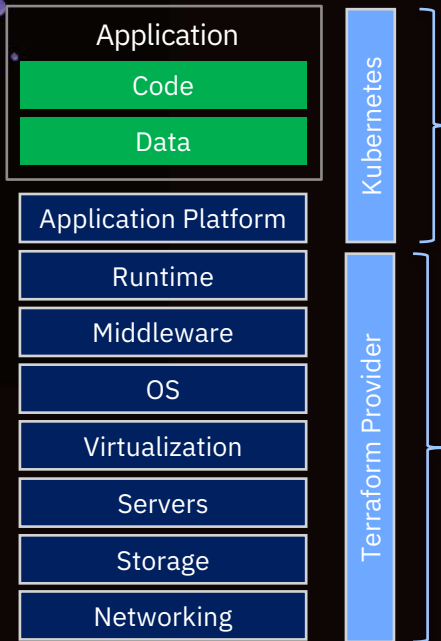
- 減少單雲錯誤
- 資源管理 – 隔離開發/測試/正式集群
- 因應不同需求的運作生命週期管理
- 強化災難復原功能
- 避免單一廠商鎖定 (vendor locking)

# 目標：應用程式部署



如何選擇正確解決方案以解決業務需求, 使用最新的開發與操作方式, 結合雲端與開放軟體技術, 擴充既有系統與投資, 產生新技術需求 (在不需  
要投入大量成本與避免不必要風險的前提下)

# 多雲管理 – 透過 Kubernetes 與各種公/私有雲打交道



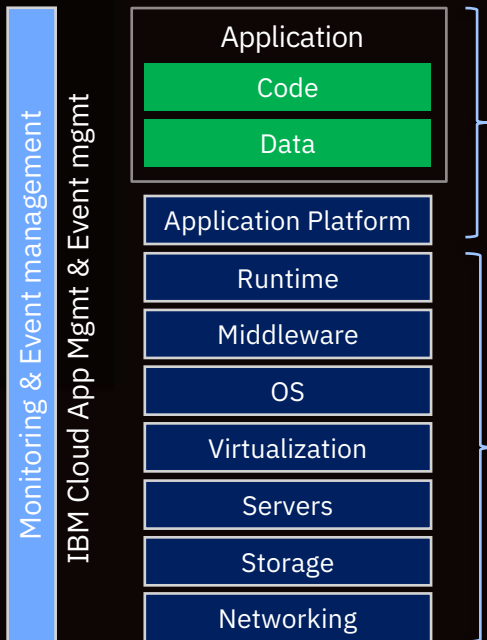
## Multicloud Manager 透過 Kubernetes APIs 來控制 Kubernetes (K8s) 容器集群

- 私有雲: IBM Cloud Private, Red Hat OpenShift
- 公有雲: IKS, EKS, AKS, GKE
- 自建雲: K8s private clouds

## Cloud Automation Manager 透過 Terraform APIs 來控制雲端資源

- 私有雲: vSphere, OpenStack, PowerVC, zVM/CMA, Nutanix AHV
- 公有雲: IBM, Azure, AWS, Google, Huawei, etc

# MCM 和 CAM 分別管理不同的雲端堆疊 (cloud stack)



## IBM Multicloud Manager

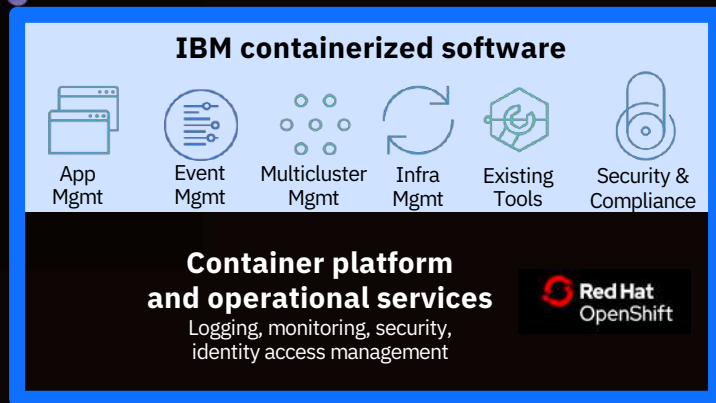
- K8s cluster mgmt.
- Container management
- Application governance and policies

## IBM Cloud Automation Manager

- Infrastructure Orchestration
- Infrastructure as Code

# Cloud Pak for Multicloud Management

針對您的核心企業應用提供快速管理, 遷移, 安全的方法, 搬遷到任何符合企業執行的容器解決方案上



## Visibility (可視性)

Increase application and cluster visibility across the enterprise from on-prem to any cloud, public or private

–

## Governance (確保性)

Manage your multicloud environments with a consistent set of configuration and security policies across all applications and clusters

–

## Automation (自動化)

Simplify your IT and application ops management while increasing flexibility and cost-saving with intelligent data analysis driven by predictive signals

# IBM Cloud Paks – 預先整合的雲端解決方案

Today, IBM offers clients *the first five Cloud Paks...*

IBM Cloud Pak for Applications	IBM Cloud Pak for Data	IBM Cloud Pak for Integration	IBM Cloud Pak for Automation	IBM Cloud Pak for Multicloud Management
Developer Tools Modernization Toolkit Frameworks and Runtimes	Organize Analyze Collect	API Lifecycle Messaging and Events App and Data Integration	Content Operational Intelligence Workflow and Decisions	Muticluster App and Infrastructure Security and Compliance Management
Common operational services	Common operational services	Common operational services	Common operational services	Common operational services
Container platform	Container platform	Container platform	Container platform	Container platform





# Cloud Pak for Multicloud Management

## IBM Multicloud Manager (K8S 管理)

- IBM Multicloud Manager provides user visibility, application-centric management (policy, deployments, health, operations), and policy-based compliance across clouds and clusters.

## IBM Cloud Automation Manager (基礎建設)

- Use Cloud Automation Manager on Red Hat OpenShift to create and edit templates and services that implement common business patterns and to deploy them in your cloud environment.

## IBM Cloud App Management (應用監控)

- IBM® Cloud App Management offers a comprehensive infrastructure monitoring solution. It's a cloud-native platform built on modern technology and microservices architecture.

## IBM Cloud Event Management (事件管理)

- Cloud Event Management can receive events from various monitoring sources, either on premises or in the cloud.



**Application  
Management**



**Event  
Management**



**Multicloud  
Management**



**Infrastructure  
Management**



**Existing Tools  
& Processes**



**Security &  
Compliance  
Management**

# IBM Cloud Pak for Multicloud Management

## Multi-Cluster Management

### Application-centric Management (應用程式為主的管 理)

Deploy, upgrade, and manage applications with consistency across multiple clouds

### Policy-based Governance (政策為基礎的確保性)

Enforce policies and ensure compliance across clusters, applications and infrastructures

### Cluster Lifecycle Management (集群生命週期管理)

Manage cloud native and traditional VM environments together as your enterprise evolves



Application Management



Infrastructure Management



Multicloud Management



Event Management



Existing Tools & Processes

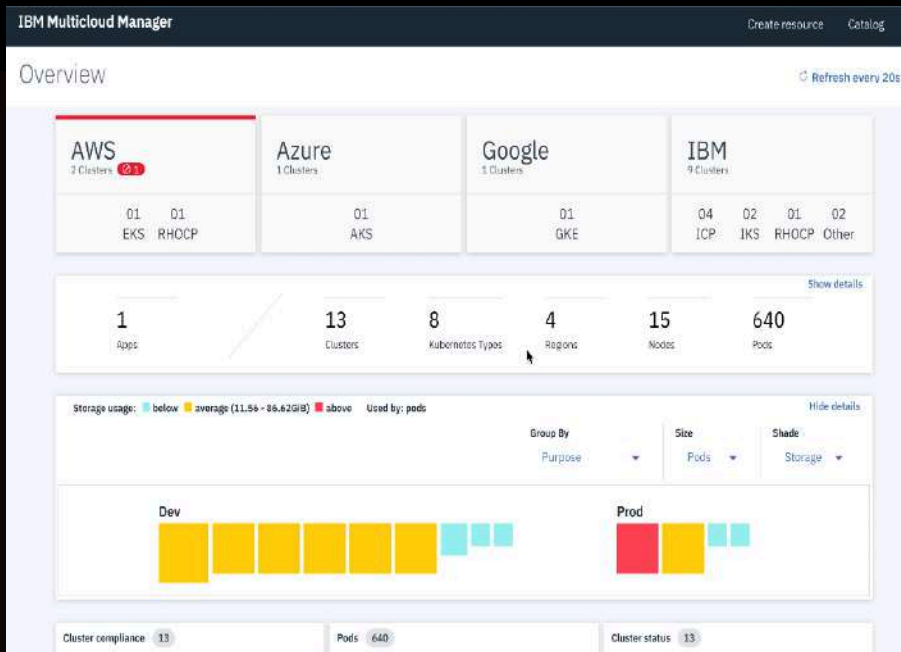


Security & Compliance Management

# Application-centric Management (應用程式為主的管理)

單一儀表板: 健康狀態, 使用率, 政策基礎在任何集群, 任何環境

- Where are the failed components?
- Where are my services running?
- How can I monitor applications across clusters and clouds?
- How can I manage clusters as if they were one environment?
- How do I monitor usage across clouds?



# Policy-based Governance (政策為基礎的確保性)

Cluster compliance 13



12 **Compliant**

---

1 **Non-compliant**

從 MCM 主控台產生需要的  
部署與安全政策, 直接派送到  
到集群上生效



Overview

Refresh every 20s

Azure

1 Clusters

01

AKS

Google

1 Clusters

01

GKE

AWS

2 Clusters **0.1**

01

01

EKS

RHOCP

IBM

1 Clusters

04

02

01

02

ICP

IKS

RHOCP

Other

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Create Compliance

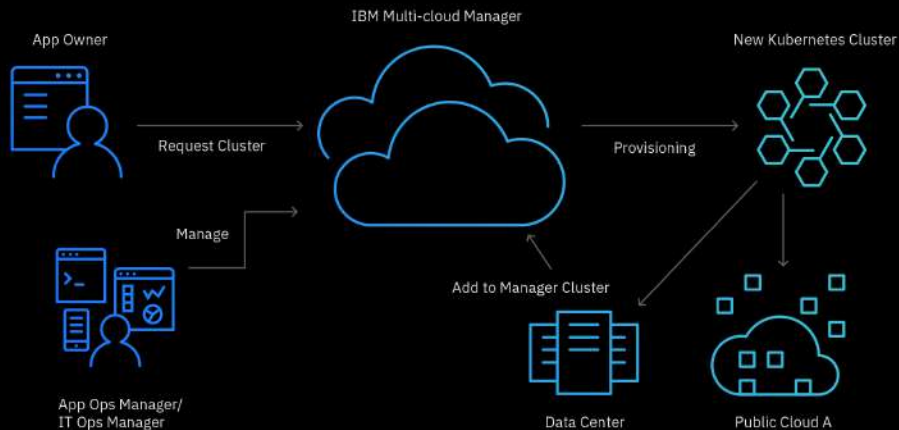
Paste content from your compliance YAML file in the editor.

```
51 - from:
52 -   - podSelector: {}
53     matchLabels: null
54 - complianceType: musthave
55 objectDefinition:
56   apiVersion: v1
57   kind: LimitRange
58   metadata:
59     name: mem-limit-range
60   spec:
61     limits:
62     - default:
63       memory: 512Mi
64     defaultRequest:
65       memory: 256Mi
66   type: Container
67 remediationAction: enforce
```

Cancel

Create Compliance

# Cluster Lifecycle Management (集群生命週期管理)



- Manages clusters across multiple data centers and public cloud Kubernetes services
- Identifies health across all clusters
- Provides visibility into problems across clusters
- Enables cluster organization

# IBM Cloud Pak for Multicloud Management

**Infrastructure Automation** powered by Terraform and Git

## Manage Infrastructure-as-Code (架構程式碼)

Automate application provisioning with a consistent process that works the same in public, private, and hybrid clouds

## Operationalize with 'Git' (與 Git 整合)

Efficiently manage infrastructure at scale

## Graphical infrastructure automation (基礎建設圖形自動化)

Graphical drag-n-drop tools to design cloud orchestration workflows and Terraform automation



Application Management



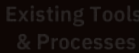
Event Management



Multicloud Management



Infrastructure Management



Existing Tools & Processes



Security & Compliance Management

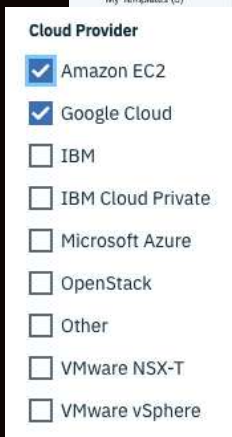
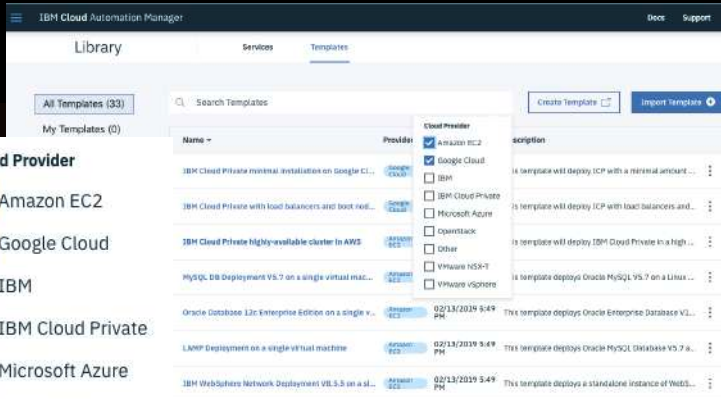
# IBM Cloud Pak for Multicloud Management **Infrastructure Automation**

## Manage infrastructure as code (架構程式碼)

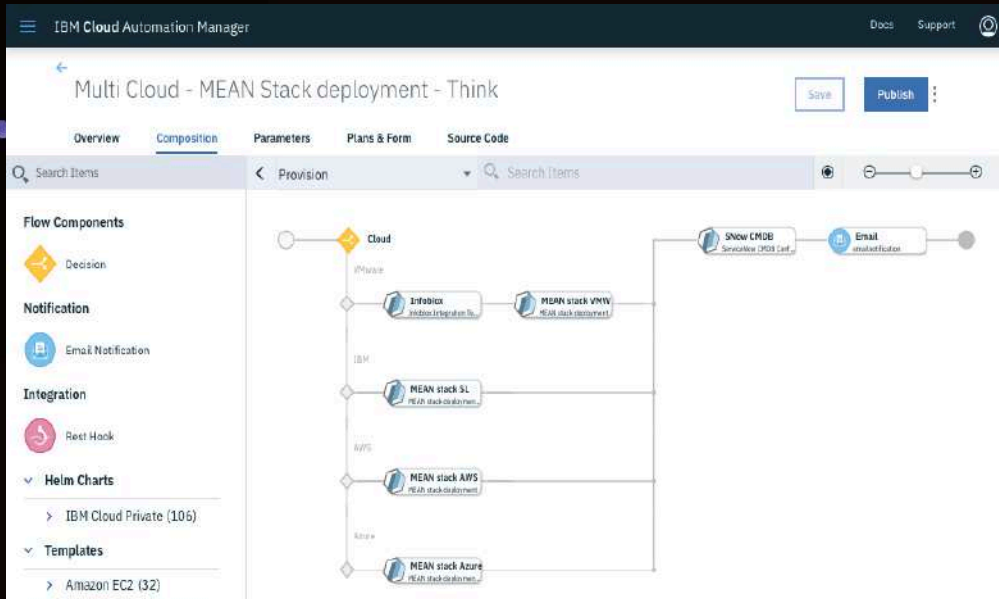
- Standardize infrastructure provisioning with common, repeatable, scalable processes
- Public, private, & hybrid clouds

## Operationalize with 'Git' (與 Git 整合)

- Fully scriptable REST API interface for use with CI/CD toolchains
- Apply custom configurations to templates with shared data objects



# IBM Cloud Pak for Multicloud Management Service Composer – 以圖形介面建立雲端工作串流



- Combine Terraform, Helm Charts, REST APIs, and ITIL integrations into composite, orchestrated service objects
- Curate service objects for ease of consumption; pre-configure 'guard rails' to hide complexity and improve compliance



# Application Management (應用程式監控管理)

## Intelligent service-level monitoring (智能服務等級監控)

Triage with less reliance on domain expertise using service topology and four standardized golden signals

## Enhanced application resiliency (加強的應用彈性)

Shift left into DevSecOps to build more reliable, secure applications

## Support for application modernization (支援應用程式現代化)

Monitor application transformation from on-prem to hybrid and multicloud deployments



Event Management

Multicloud Management

Infrastructure Management

Existing Tools & Processes



Security & Compliance Management

# IBM Cloud App Management – 雲端/地端資源監控

## Why Cloud App Management?

- Industry leading management of Kubernetes managed container environments running on IBM Cloud Private and RedHat OpenShift

## Capabilities

- Determine root cause by visualizing the cause and effect of each layer of complex modern run time environments
- Time slider to visualize the state of each layer in the environment at the point in time an event was fired
- Enable developers to find performance problems earlier in the app lifecycle with open-source lightweight data collectors

Search and filter to get to the right layer of the Kubernetes environment

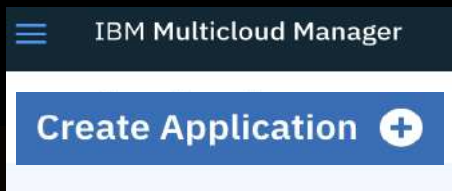
Cluster level detail

Node level detail

Pod level detail

container level detail

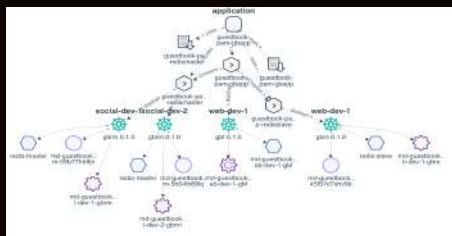
# Application Management: Create, Monitor, Manage and Backup



單一管理介面部署應用程式



監控應用程式 Grafana/Prometheus



瀏覽部署在各個雲端的應用程式拓樸圖

# IBM Cloud Pak for Multicloud Management

## Event Management

Help first responders restore service promptly (快速回復服務)

Quickly and effectively cut through 75% of the event noise to prioritize, diagnose, assign, and resolve incidents from a single service

Support continuous app rollouts into production (協助應用程式上線)

Bridge the gap between Dev and Ops by automatically routing incidents bringing together Dev and Ops teams to resolve complex faults fast

Empower Ops leaders to improve efficiency (協助管理者增進管理效率)

Improve efficiency by turning knowledge and observed activity into guidance and automation so incidents are resolved without intervention



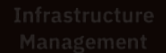
Application Management



Event Management



Multicloud Management



Infrastructure Management



Existing Tools & Processes



Security & Compliance Management

# 集群事件管理主控台

Incidents

Priority **1** : Incident #0061-33-0

Resolution view **Events** Timeline

2 of 2 events

Search

Sev	State	Resource type	First occurrence	Summary	Event type
>	Open	Server	Apr 9, 2019   12:03:28 PM E...	Docker host is under high load, th...	high_cpu_load
▼	Cleared	object	Apr 9, 2019   12:04:30 PM E...	rolebindings 'operate-pods-rolebi...	notification

State	Location	Host name	Status	Count
Cleared	-	-	KBs ' must have' ob...	3

ID	IP address	Sender type	Sender name	Last changed
#fbvx-xb6a	-	KBs controller	MCM Policy Controller	Apr 9, 2019   12:04...

[See more info →](#)

My incidents  
0 incidents

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# IBM Multicloud Management 與眾不同功能

## Multicloud Management

Manage clusters & applications across multiple environments

## One cloud Architecture

Public and Private Cloud Consistency

## Enterprise Grade Content Catalog

IBM middleware, AI, data, and analytics; Open Source

## Avoid vendor lock-in

Open Standards & Platform Agnostic

## Security & Governance

(Policy management, key protection, encryption)

## Best Practices and Prescriptive Guidance

(IBM Cloud Garage)

## \*2019 Gold Winner\*

IBM Multicloud Manager,  
Thomas Edison Award™ for  
“Best Technology Market Solution.”



With a multicloud strategy, it can become time-consuming, expensive and difficult to manage environments ..... But IBM Multicloud Manager integrates all your environments in a single view that gives you optimal control over how you see, govern and automate everything.



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