

VMware Tanzu Open-Source First Strategy

VMware Tanzu在CNCF社群的貢獻參與
與技術發展藍圖

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Tanzu 雲原生應用開發解決方案 資深協理

Modern Apps and Platform BU, VMware

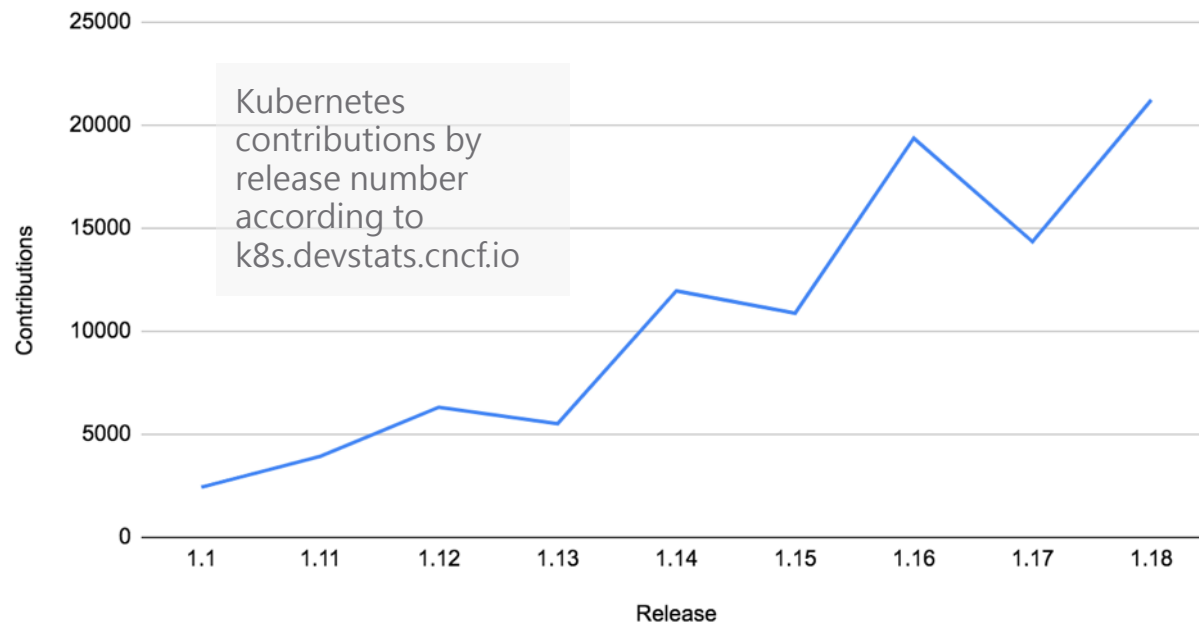
CNCF Kubernetes Eco System

The image displays a grid of logos for the CNCF Kubernetes ecosystem, organized into several functional categories:

- App Definition & Development:** Includes Database (e.g., Vitess, KV), Streaming & Messaging (e.g., cloudevents, NATS), Application Definition & Image Build (e.g., HELM, KUBERNETES FRAMEWORK), and Continuous Integration & Delivery (e.g., argo, BRIGADE).
- Orchestration & Management:** Includes Scheduling & Orchestration (e.g., kubernetes), Coordination & Service Discovery (e.g., CoreDNS, etcd), Procedure (e.g., gRPC), Service Proxy (e.g., envoy, CONTOUR), API Gateway (e.g., KONG), and Service Mesh (e.g., LINKERD, Istio).
- Runtime:** Includes Cloud Native Storage (e.g., ROOK, CSI), Container Runtime (e.g., cri-o), and Cloud Native Network (e.g., CNI, CLUSTER).
- Provisioning:** Includes Automation & Configuration (e.g., airship, ANSIBLE), Container Registry (e.g., HARBOR, Dragonfly), Security & Compliance (e.g., falco, Open Policy Agent), and Key Management (e.g., spiffe, SPIRE).
- Platform:** Includes Certified Kubernetes - Distribution (e.g., AKS, EKS, GKE), Certified Kubernetes - Hosted (e.g., AWS, Azure, Google Cloud), and Certified Kubernetes - Installer (e.g., kubeadm, kubespray).
- Observability and Analysis:** Includes Monitoring (e.g., Prometheus, Thanos), Logging (e.g., fluentd, ELK), Tracing (e.g., Jaeger, OpenTracing), Chaos Engineering (e.g., Gremlin, Chaos Mesh), and Serverless (e.g., AWS Lambda, Azure Functions).
- PaaS/Container Service:** Includes various managed services like Pivotal Cloud Foundry, Red Hat OpenShift, and others.

VMware 是 CNCF Kubernetes 社區貢獻的領導者

Committed to chopping wood and carrying water



https://k8s.devstats.cncf.io/d/9/companies-table?orgId=1&var-period_name=Last%203%20years&var-metric=contributions

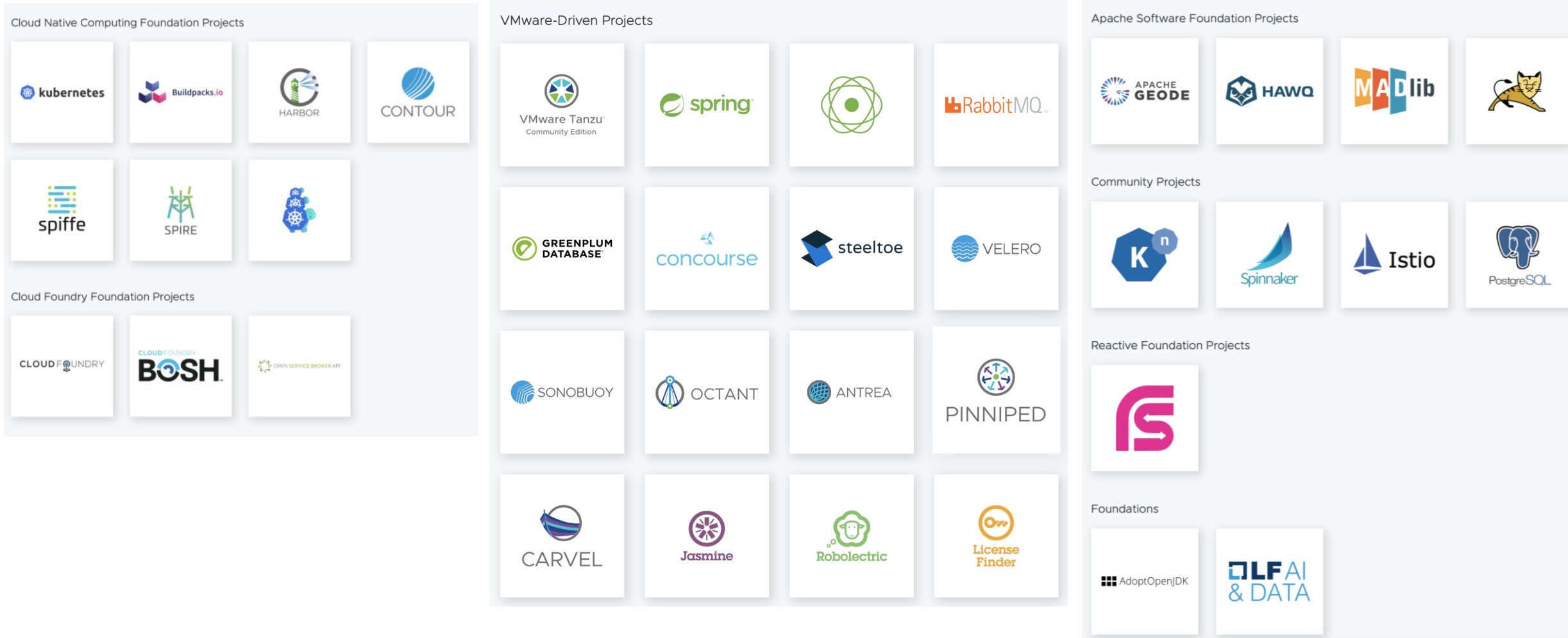
2nd place of 3,352 company
Community contributions

10 of 23
special interest groups led by VMware

4
working groups led by VMware



VMware Tanzu 產品組合與開源保持一致，並以開源項目為基礎建構 CNCF and Linux Apache Foundation



K8s 容器技術 獲得應用開發人員親睞

Key Enabler for Modern Application Development

快



迅速地
創建環境

輕



最少
所需資源

可移植



從開發/測試遷移
到生產環境
保持一致性

VMware Tanzu Kubernetes (K8s)

為企業提供調配、營運和管理生產級 Kubernetes 集群的解決方案



kubernetes

完全支援 Kubernetes

Tanzu K8s 使用最新的穩定 Kubernetes 發行版，沒有專屬擴展。開發人員使用 kubectl CLI 將容器映像作為真實容器運行。



多雲和Day 2維運

Tanzu K8s允許您在任何雲上建構具有內置網路、安全性、HA、日誌記錄、監控、分析和自動運行狀況檢查的強大容器服務。

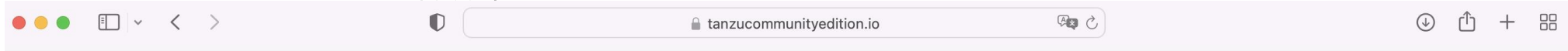


適用於更複雜的
雲原生微服務應用

kubectl運行體驗
Kubernetes 是您的編排器/調度程式，包括高級網路服務、工作負載部署模型、負載平衡、網路拓撲和策略。

Tanzu Community Edition

Tanzu Kubernetes Grid 社群版本



- Home
- Community
- Blog
- Resources
- Packages
- Documentation
- Download

Thinking about modernizing your software supply chain with Tanzu Community Edition? [Watch the new demo](#)

Experience VMware Tanzu now

VMware Tanzu Community Edition is a full-featured, easy-to-manage Tanzu platform for learners and users, especially those working in small-scale or preproduction environments

[▶ WATCH THE OVERVIEW](#)

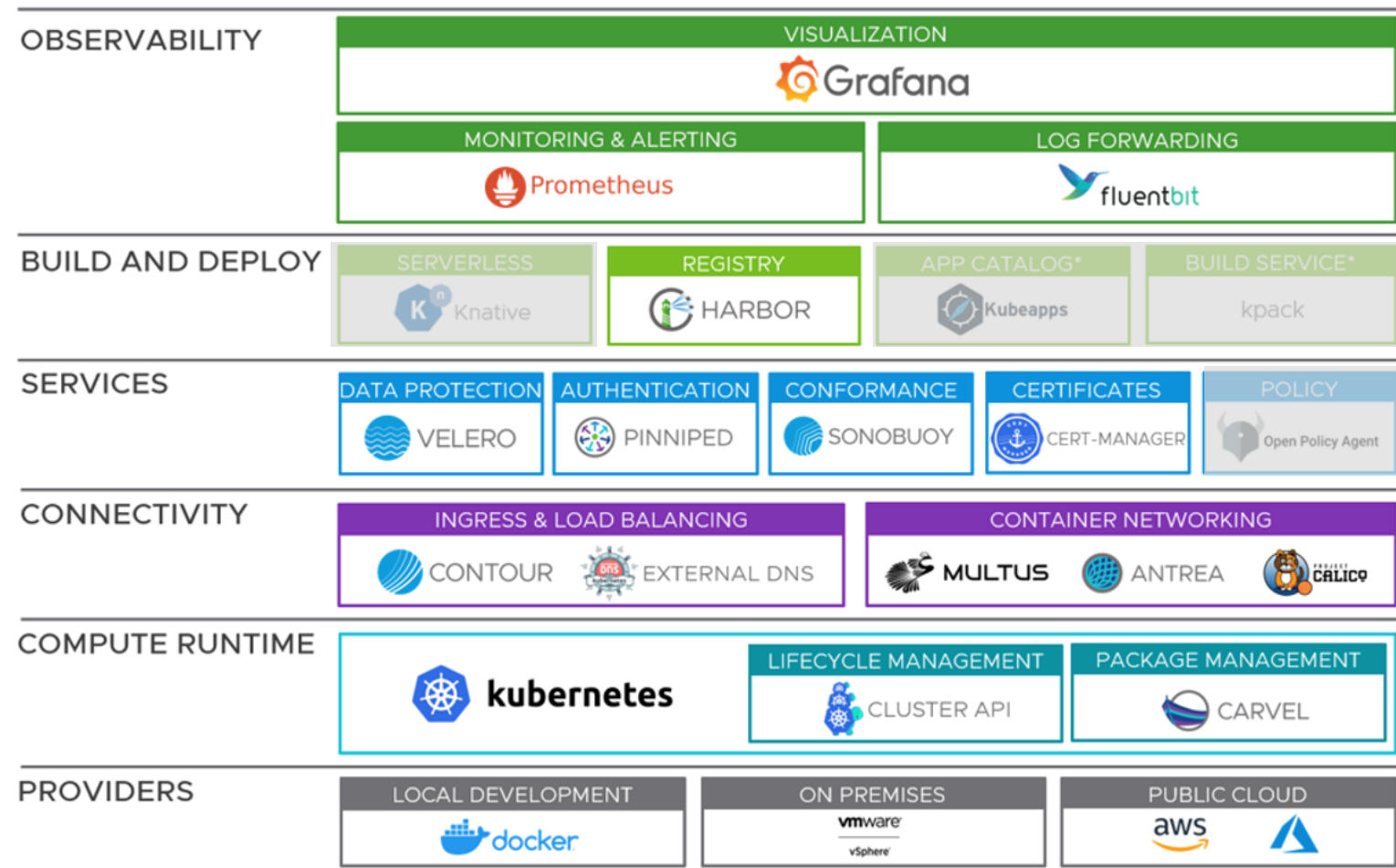
[DOWNLOAD LATEST RELEASE](#)



提供經 VMware 驗證的 CNCF 開源軟體，可依所需服務進行供裝與技術支援

TKG Packages 基於CNCF 開源專案 Carvel API Resources，提供一組可靠的、單一用途的、可組合的工具，這些工具有助於應用程序開發、配置和部署到 Kubernetes

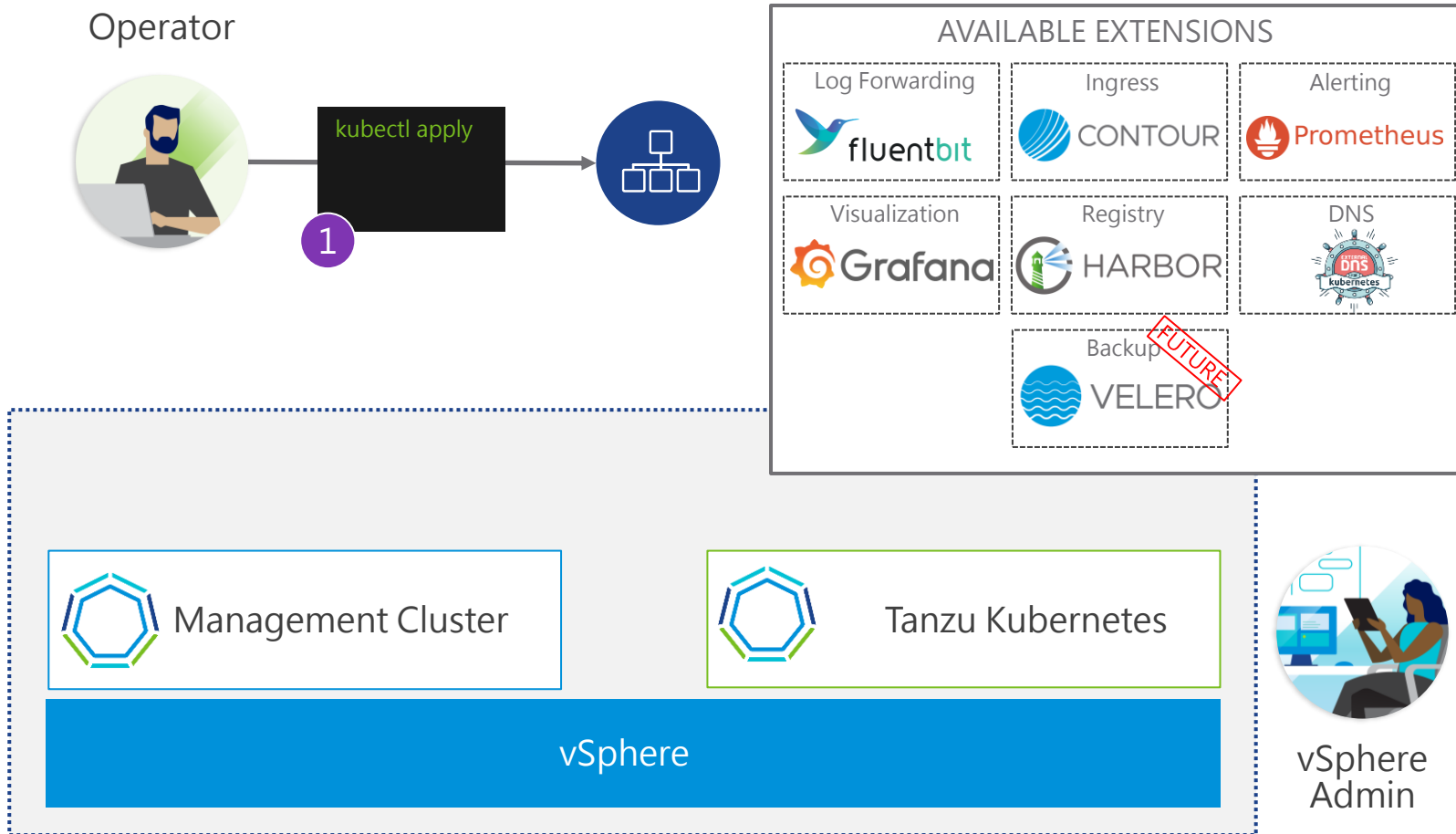
- 針對資安，VMware 會基於 CVE 進行修補和更新
- 針對穩定性，VMware 會先於社群跟內部進行測試，確認後才整合至產品
- 針對相容性，VMware 所提供之 Open Source 軟體套件，皆能引用上游專案文件進行設定



預計支援

共用服務的簡單部署和管理

Extensions Framework : 基於CNCF 開源專案 Carvel API Resources



> Operator

Install TKG Extension

prerequisites on the cluster

Create namespace

Deploy extension based on documentation

Configure applications to use extension









Continually improving for complete **lifecycle management**

> vSphere Admin

Extensions are provided as binaries and container images built, signed, and supported by VMware

Available Tanzu Packages

VMware-Provided packages

Function		Package	Description
Certificate management		cert-manager	Cert-manager將certificate和certification頒發者添加為 Kubernetes 集群中的資源類型，並簡化了獲取、續訂和使用這些certificate的過程
Container networking		multus-cni	此軟體包提供了將多個網路介面附加到 Kubernetes 中的 Pod 的功能
Container registry		harbor	Harbor是一個開源註冊表，它通過策略和基於角色的存取控制來保護工件，確保圖像被掃描並且沒有漏洞，並將圖像簽名為受信任
Continuous delivery (CD)		fluxcd-source-controller helm-controller kustomize-controller	Flux是一組面向 Kubernetes 的持續和漸進式交付解決方案，這些解決方案是開放和可擴展的（GitOps 工具包）
Ingress control		contour	Contour是一個開源的 Kubernetes 入口控制器，為 Envoy Edge和Service Proxy提供控制平面
Log forwarding		fluent-bit	Fluent Bit是一個超快速、輕量級且高度可擴展的日誌記錄和指標處理器和轉發器
Monitoring		grafana prometheus	Prometheus是一個開源系統監控和警報工具包。Grafana允許您查詢，可視化，警報和瞭解您的指標。
Service discovery		external-dns	ExternalDNS將公開的Kubernetes Service和Ingress與 DNS 供應商同步

Carvel : Package Management

Tanzu package

- kapp : 類同 helm , 主要做 Kubernetes 套件生命週期管理
- imgpkg : 將 Kubernetes 打包成邏輯觀念 bundle 進行交付分發
- kbld : 協助修正映像檔引用位置

CARVEL Home Projects Community Blog Resources #carvel in Kubernetes Slack

Build on Kubernetes with confidence

Carvel provides a set of reliable, single-purpose, composable tools that aid in your application building, configuration, and deployment to Kubernetes.

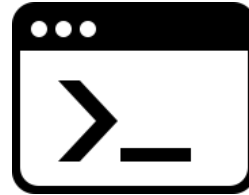
<p>kapp-controller</p> <p>A Package Manager that is compatible with Gitops ideas. Continuous delivery for Kubernetes Apps and Packages.</p>	<p>ytt</p> <p>Template and overlay Kubernetes configuration via YAML structures, not text documents. No more counting spaces, or manual quoting.</p>	<p>kapp</p> <p>Install, upgrade, and delete multiple Kubernetes resources as one "application". Be confident your application is fully reconciled.</p>
<p>kbld</p> <p>Build or reference container images in Kubernetes configuration in an immutable way.</p>	<p>imgpkg</p> <p>Bundle and relocate application configuration (with images) via Docker registries. Be assured app contents are immutable.</p>	<p>vendir</p> <p>Declaratively state what files should be in a directory.</p>

Tanzu Packages Deployment Options

End User Experience for Package Management



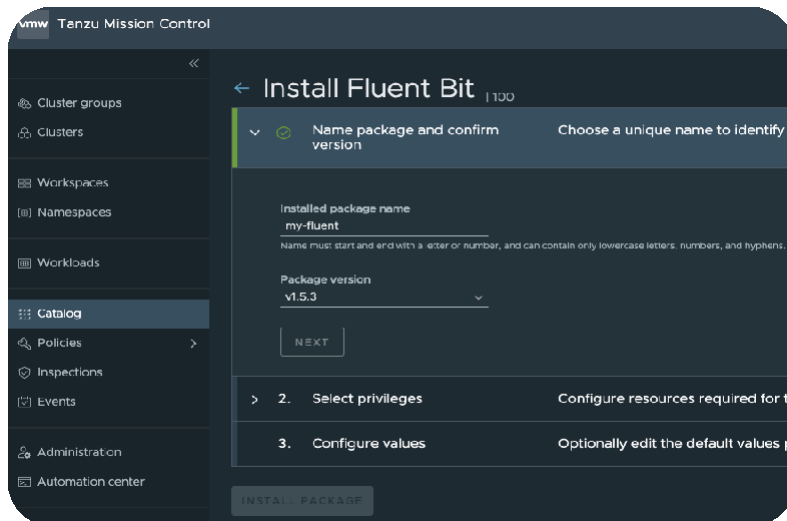
TMC UI



Tanzu CLI



Kubernetes Declarative APIs



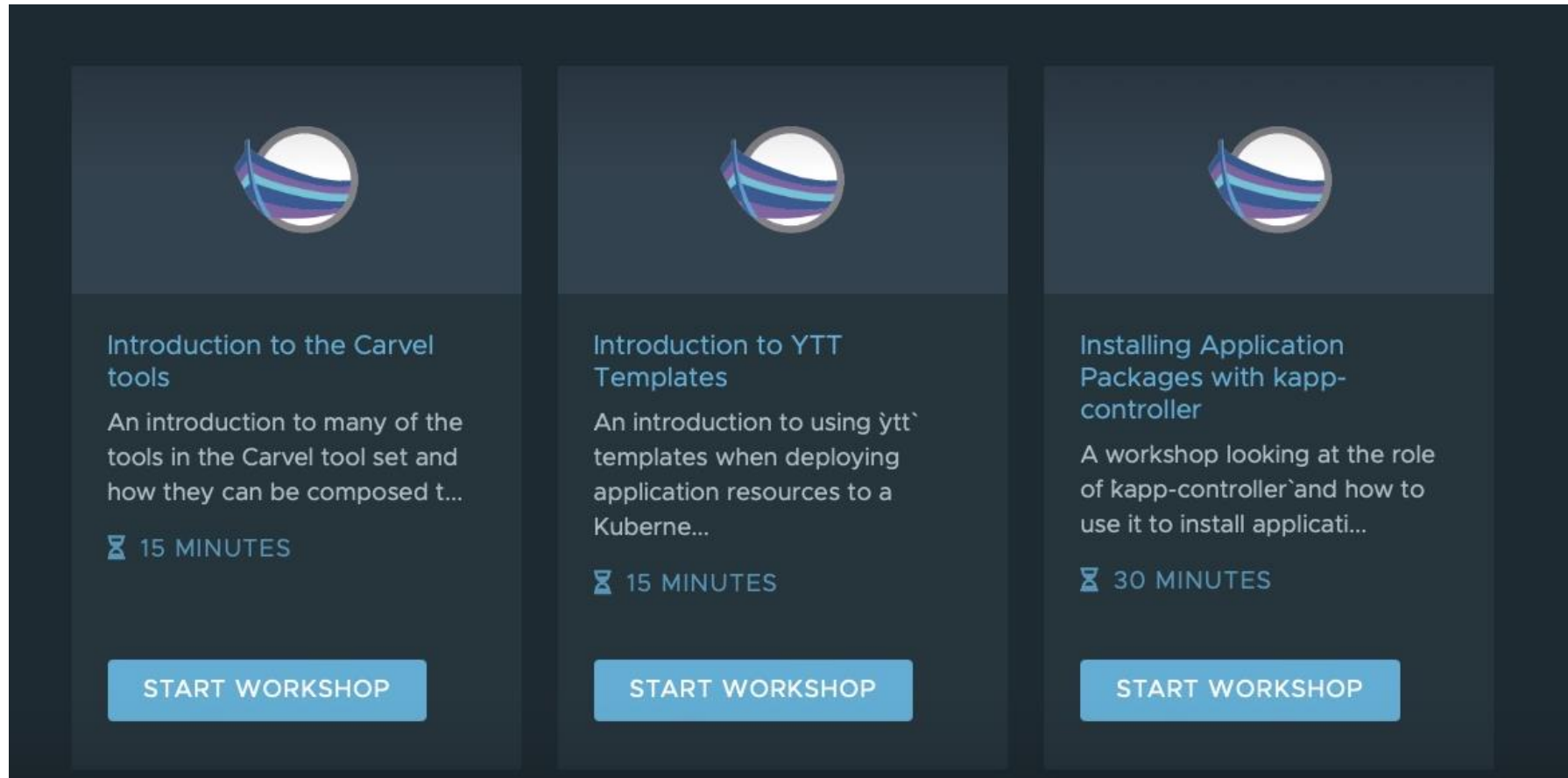
```
$ tanzu package install my-fluent -p  
fluent.vm.com [-v 1.5.3+build.1]
```

```
$ tanzu package install my-fluent \  
--package-name fluent.vm.com \  
[--package-version 1.5.3+build.1] \
```

```
apiVersion: packaging.carvel.dev/v1alpha1  
kind: PackageInstall  
metadata:  
  name: my-fluent  
  namespace: default  
spec:  
  serviceAccountName: default-ns-sa  
  packageRef:  
    refName: fluent.vm.com  
    versionSelection:  
      constraints: 1.5.3
```

Tanzu Developer Center Hands-on-workshops : Try Carvel

<https://tanzu.vmware.com/developer/workshops/?filters=carvel>



Workshop Title	Duration
Introduction to the Carvel tools	15 MINUTES
Introduction to YTT Templates	15 MINUTES
Installing Application Packages with kapp-controller	30 MINUTES

VMware Tanzu 產品組合與其基於的開源軟體

VMware 開源中間軟體：建構部署現代應用

專案Tanzu產品	開源技術元件	功能說明	開源專案項目	來源
Tanzu Application Platform	TAP開源社群版, 預計今年下半年	提供DevSecOps流程中CI/CD工具模板套件供應鏈整合和安全控管	To-be-released	去年SpringOne大會提出, 目前1.2版GA
VMWare Spring Runtime 訂閱	Spring	包含Spring framework框架功能元件提升Java開發工作生產力, 包含OpenJDK以及TomCat的企業技術支持	Spring.io	Spring社群主要為VMware所貢獻支持 SpringOne技術大會是VMware主要舉辦
Tanzu Gemfile	Apache Geode	開源 Cache /Key-Value In-Memory資料庫	https://geode.apache.org	Tanzu Gemfile同等於Apache GEODE, 為VMware主要貢獻支持
Tanzu RabbitMQ	RabbitMQ	開源MQ 訊息佇列服務工具	https://www.rabbitmq.com	VMware主要貢獻支持
Tanzu SQL	Postgres SQL /MySQL	開源關聯式資料庫	https://www.postgresql.org https://www.mysql.com/products/community/	提供VMware驗證過的PostgresSQL / MySQL版本, 可透過Tanzu DMS達成DBaaS資料庫生命週期管理
Tanzu Kubernetes Grid	Tanzu Kubernetes Grid	Kubernetes Runtime	CNCF Natvie K8s Tanzu Community Edition: https://tanzucommunityedition.io	與CNCF開源K8s相容的TKG Runtime企業版, 另VMware也有開源版Tanzu Community Edition

VMware 持續貢獻並結合開源生態系提供技術資源的PaaS 軟體



注：



VMware開發並維護



VMware作為主要貢獻者，
並提供自己的企業級版本

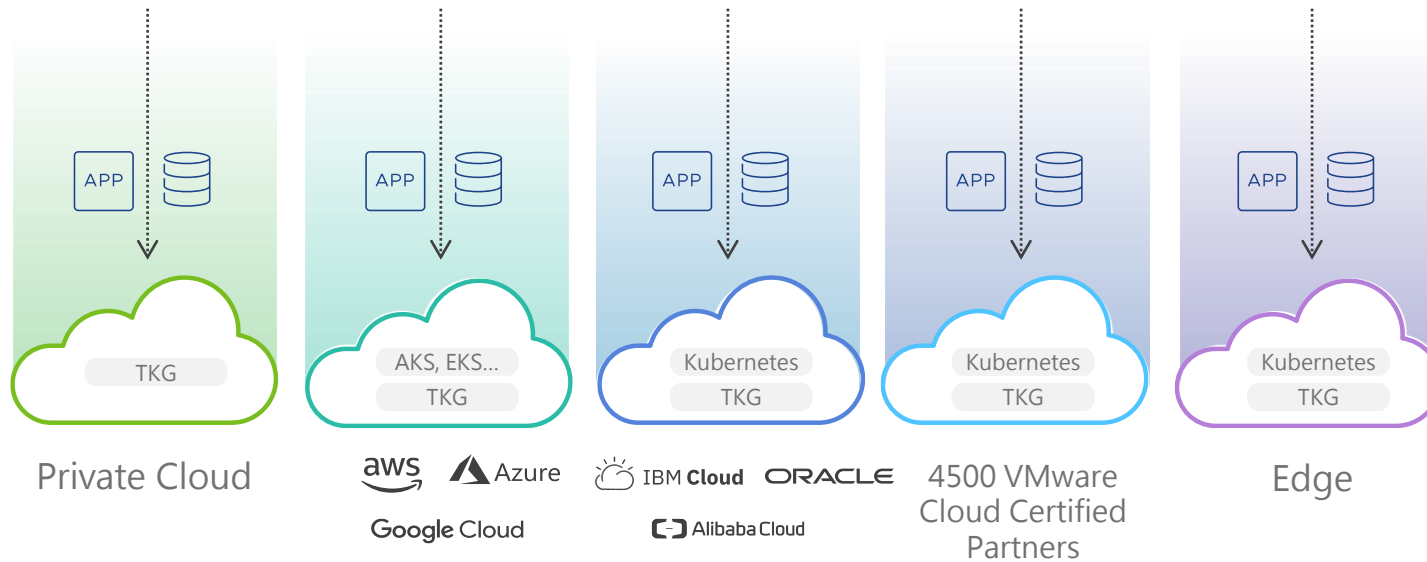


VMware是主要貢獻者

VMware Tanzu Application Platform

在任何 Kubernetes 上提供卓越的多雲開發人員體驗

Tanzu Application Platform



快速啟動開發人員使用應用程式範本、IDE integration以及輕鬆存取 API 和資料服務

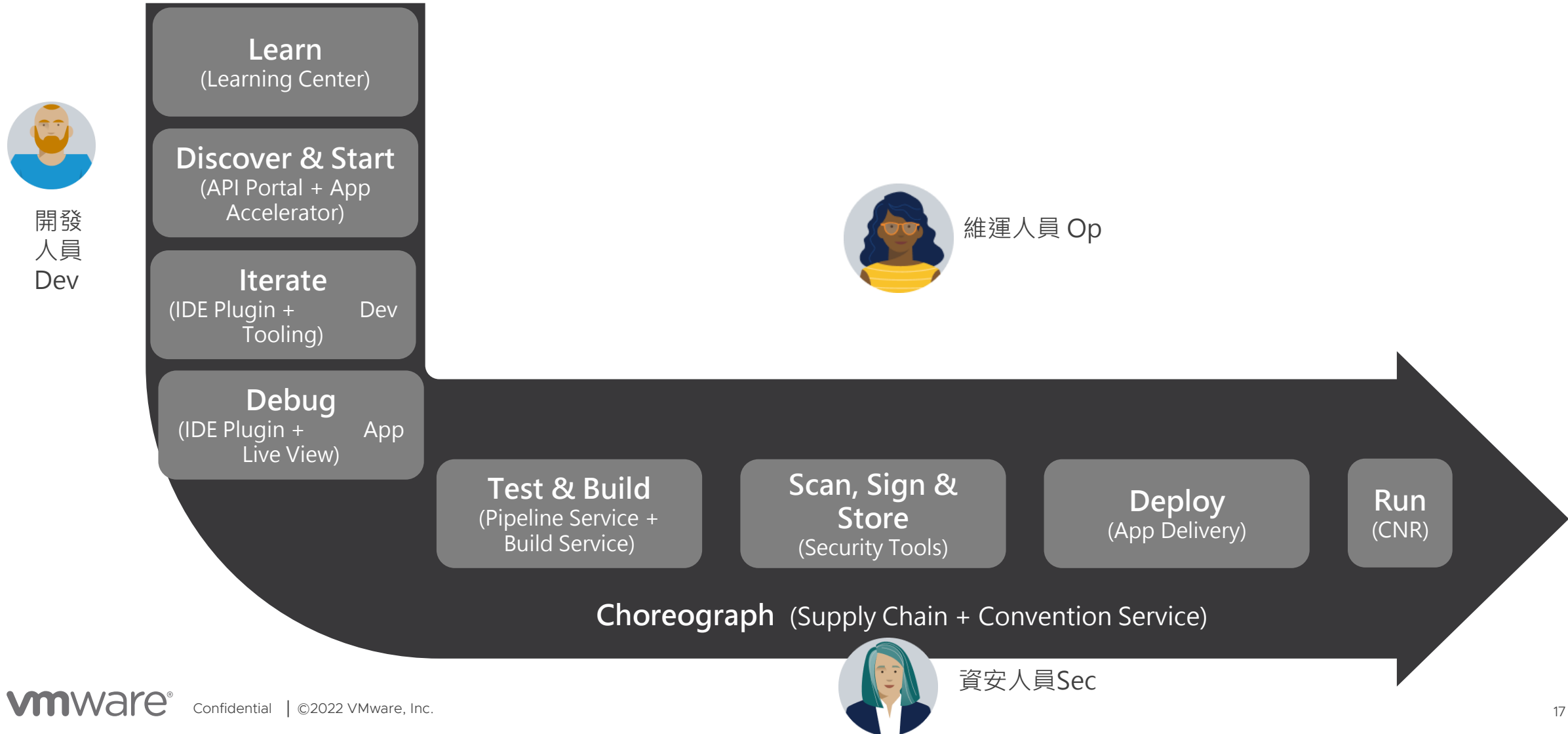
檢查正在運行的應用程式以分析行為並進行迭代

自動化容器建構和維護，作為安全軟體供應鏈的一部分

使用安全、自動化的管道pipelines更快地將代碼部署到生產環境

Tanzu Application Platform

安全、可擴展、模組化且可以快速複製於任何專案的平穩交付路線



TAP 產品技術採用及供裝的技術元件主要基於開源軟體

Tanzu 所有產品線均維持採取 opensource-first approach

技術元件	功能說明	開源專案項目	來源
Backstage	建立使用者自助服務入口網站	CNCF開源項目	最早由Spotify貢獻
Cartographer	允許創建安全、可重用的供應鏈，在一個地方定義所有應用程式 CI /CD	https://cartographer.sh	VMware於2021年9月基於TAP的技術元件
Cloud Native Buildpacks : (Tanzu Build Service)	Kpack 是 CNB 的平台實現，它利用非特權 Kubernetes 原語來建構容器映像。Paketo是CNB的構建包實現，為最流行的語言和框架提供生產就緒的構建包。只需引入你的應用，Paketo 構建包就會檢測你的應用正在使用的語言，收集所需的依賴項，並將其構建到映射中。Paketo目前包括 Java，GO，Graal，.Net，PHP和Python的構建包，僅舉幾例。	CNCF開源項目	最早由Pivotal(現為VMware)與Heroku提出
Knative (Tanzu Cloud Native Runtimes)	Knative 是 VMware Tanzu 的 Cloud Native Runtimes 的核心，用來支持無伺服器運算架構(Serverless)	CNCF開源項目	VMware為Knative最早期的Steering Committee
Spring	將近 20年有超過2/3的Java開發者使用Spring Boot和Spring framework提升開發工作生產力. TAP的設計原則也是基於Spring生態系的影響	Spring.io	Spring社群主要為VMware所貢獻支持
Tekton	Tanzu Application Platform 流水線服務由 Tekton 提供支援，Tekton 是一個功能強大且靈活的框架，用於創建 CI/CD	https://tekton.dev 開源項目	The Linux Foundation Projects > CD.Foundation

Backstage is an open platform for building developer portals.

Created at



Donated to



The Backstage plugin ecosystem

60+ PLUG-IN IN PIPELINES TO QUICK START

60+

Contributed
OSS plugins



Software
Catalog



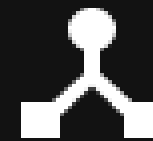
Software
Templates



TechDocs



Kubernetes



DEVELOPERS LOVE IT

Backstage is owned
and led by a diverse,
rapidly growing open
source community

18k+

Stars on
GitHub

1.5k+

Contributors

250+

Adopting
companies

11k+

Contributions

Backstage is building a proven track record across industries



NETFLIX

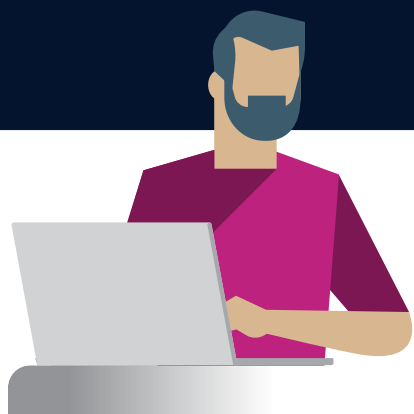
ROKU



And many more, including government agencies
and big tech orgs with 100k+ developers

DEV EXPERIENCE – APPLICATION ACCELERATOR

“I can 我可以 使用預配置的範本立即開始編寫代碼，並存取已批准的 API”



DISCOVER AND JUMP START QUICKLY

The screenshot displays the 'Accelerators' page in the Tanzu Application Platform. The page title is 'Accelerators | Tanzu Application Platform'. Below the title, it says 'Choose an accelerator to generate a new component'. The interface includes a search bar, a 'PERSONAL' filter with 'Starred' (0), and a 'YOUR ORGANIZATION' filter with 'All' (10). There is also a 'TAGS' dropdown menu. The main content area shows a grid of accelerator cards, each with a title, tags, a description, and 'VIEW REPOSITORY' and 'CHOOSE' buttons. The accelerators listed are:

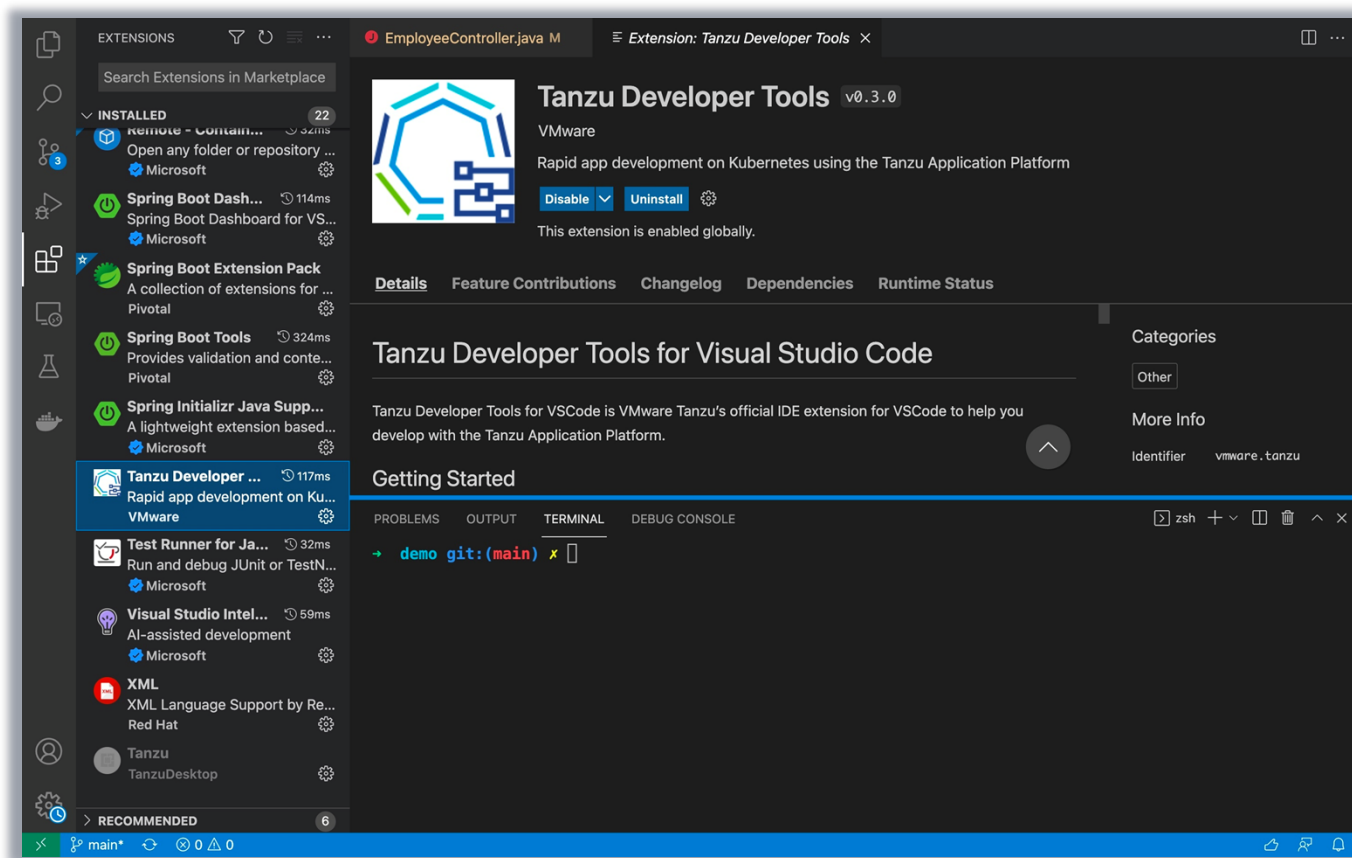
- Hello Fun**: A simple Spring Cloud Function serverless app -- includes option for native build. Tags: java, spring, cloud, function, serverless.
- Hello ytt**: Demonstrates how to use the YTT transform to generate YAML. Tags: yam, ytt.
- New Accelerator**: Generate yaml for a new Accelerator resource. Tags: tanzu, accelerator.
- Node Express**: A Node.js sample app using Express. Tags: node, express.
- Spring PetClinic**: A sample Spring-based application. Tags: java, spring.
- Spring Boot JPA**: Spring Boot application that accesses an SQL database using JPA. Tags: java, spring, jpa, sql.
- Tanzu Java Web App**: A sample Spring Boot web application built with Tanzu supply-chain. Tags: java, spring, web, tanzu.
- C# Weather Forecast**: A C# sample accelerator. Tags: dotnet, c#.
- F# Weather Forecast**: An F# sample accelerator. Tags: dotnet, f#.
- Steeltoe Weather Forecast**: (partially visible) Tags: dotnet, c#, steeltoe.

DEV EXPERIENCE

“I have 我可以透過IDE即時存取我觸手可及的開發工具，以便更快地反覆運算和調試代碼。”



ITERATE AND DEBUG RAPIDLY

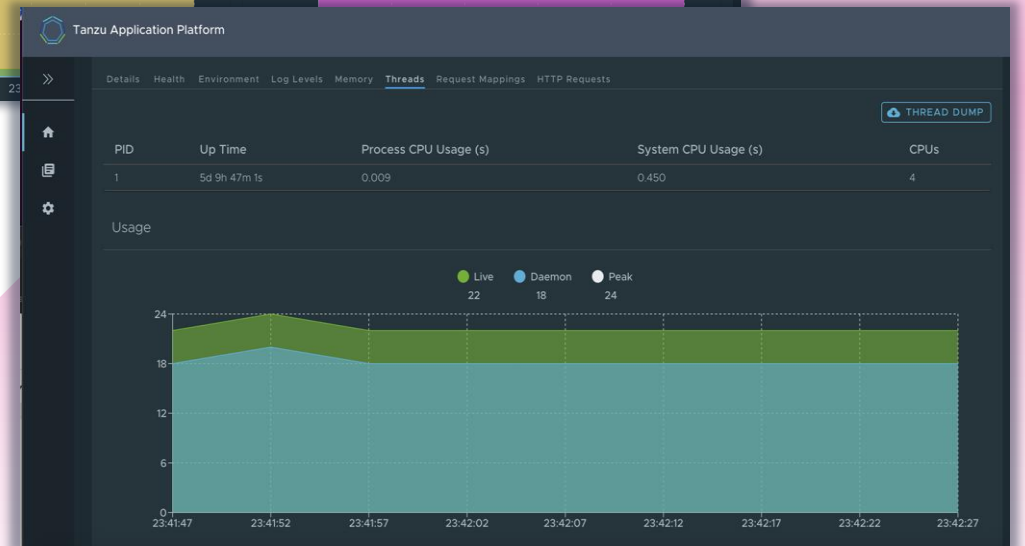
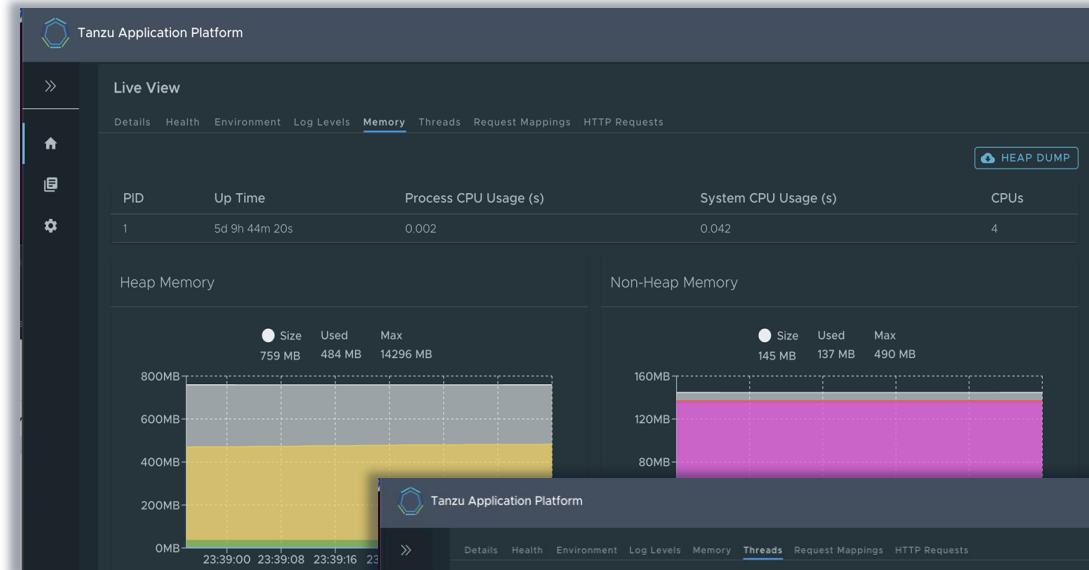


DEV EXPERIENCE

"I have 我可以瞭解我的應用程式的運行狀況和性能，以便我可以進行輕量級故障排除、調試和快速反覆運算"



GAIN INSIGHTS EASILY



DEV EXPERIENCE

“I can 我可以存取企業內集中式 GUI，提供一致的用戶體驗，輕鬆查看工作負載和應用程式。”



CONSISTENT USER EXPERIENCE

Your Organization Catalog

Name	System	Owner	Type	Lifecycle	Description	Tags	Actions
backstage-component	backstage	default-team	service	alpha	Tanzu...	apps-v1	[Icons]
petclinic-app	petclinic	spring-devs	service	experimental	Petclinic...		[Icons]
tanzu-java-web-app	demo	default-team	service	demo	Tanzu...	app-accelerator	[Icons]

Tanzu Application Platform - petclinic-app

Component — SERVICE: petclinic-app

Overview: tanzu-spring-pet-clinic (Ready: True)

Status Conditions:

Condition Type	Status	Last Transition
Ready	True	7 days
ConfigurationsReady	True	7 days
RoutesReady	True	7 days

Ownership: tanzu-spring-pet-clinic (spring-devs)

Annotations (5):

- kapp.k14s.io/identity: v1default/serving.knative.dev/Service/tanzu-spring-pet-clin...
- kapp.k14s.io/original: ["appVersion":"serving.knative.dev/v1","kind":"Service","meta...
- kapp.k14s.io/original-diff-md5: 23874005b98810547c24288e7c95c12
- serving.knative.dev/creator: system:serviceaccount:default:service-account
- serving.knative.dev/lastModifier: system:serviceaccount:default:service-account

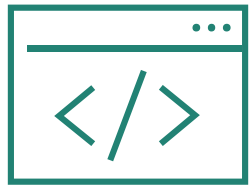
Labels (4):

- app.kubernetes.io/component: run
- carto.run/workload-name: tanzu-spring-pet-clinic
- kapp.k14s.io/app: 1636661768125516432
- kapp.k14s.io/association: v1.3782d2678d03daac0690daa7a1eb75c4a

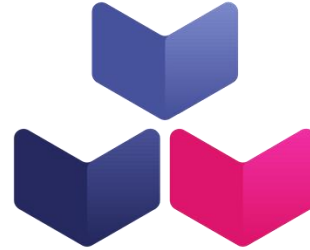
Cloud Native Buildpacks

SECURED SOURCE TO IMAGE

Source Code



Cloud Native Buildpacks



OCI Compliant Containers



Open Source Buildpacks + Build Platform



vmware®
kpack

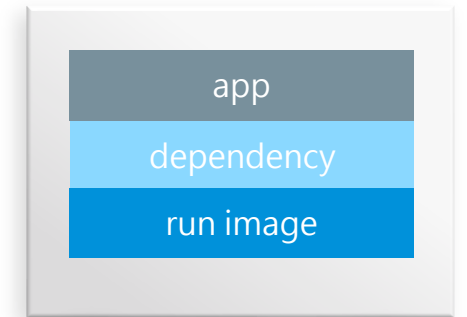
Enterprise Ready Buildpacks + Build Platform



VMware Tanzu
Buildpacks



VMware Tanzu
Build Service

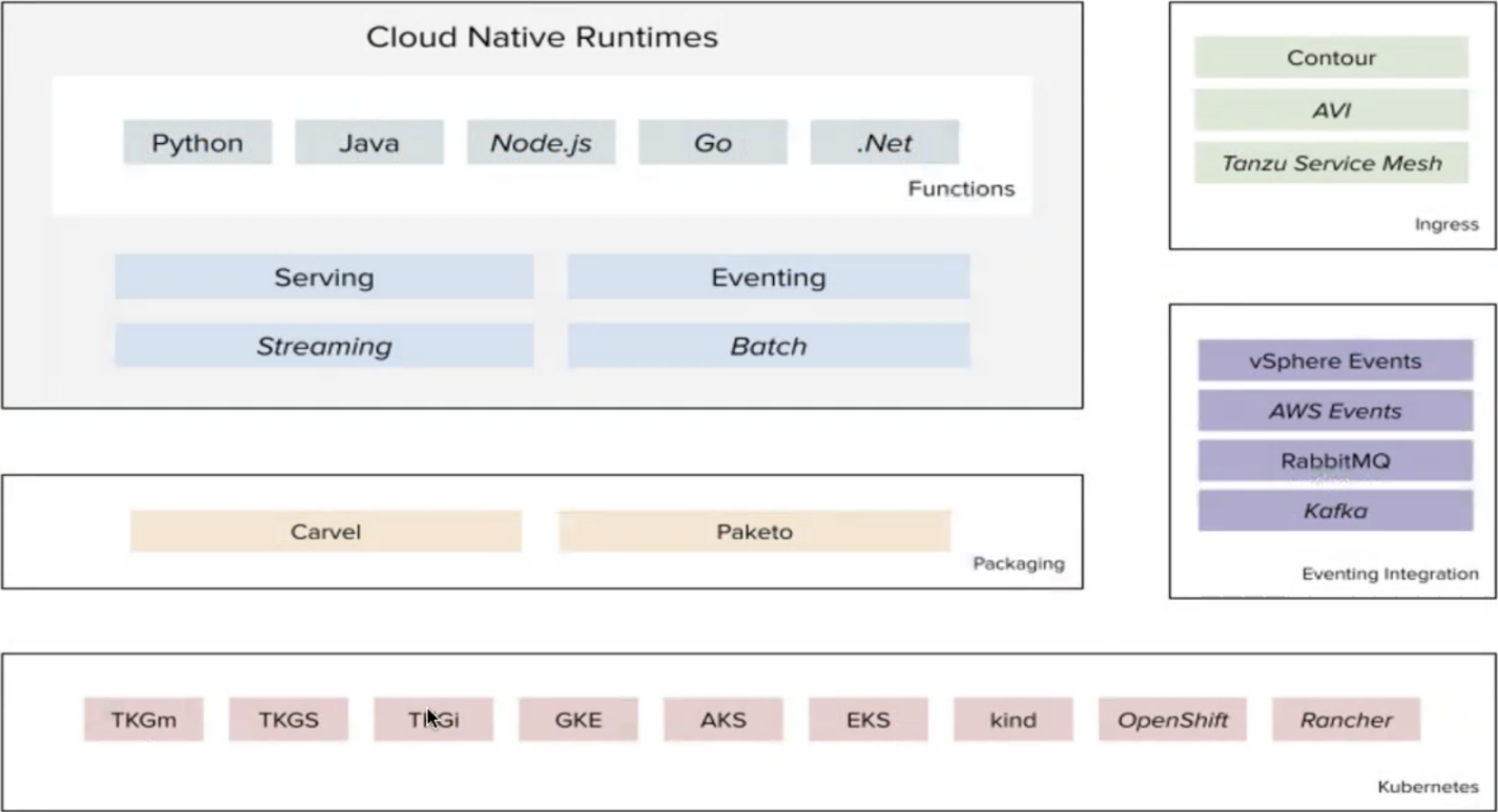


Kubernetes



Public Clouds

Cloud Native Runtimes - Knative



Tanzu Application Platform – 提供Ops一致且自動化CI/CD流水線體驗

PREDEFINED CI/CD



OPS EXPERIENCE

“我有一致且自動化的方式從source code到建立容器”

source:
git:
<https://github.com/myapprevison:dev>

opnjdk CNB releases
v1.0.0-M7 released Apr 10
v1.0.0-M6 released Apr 1
v1.0.0-M5 released Jan 31
v1.0.0-M4 released Jan 16

cflinuxfs3 releases
0.92.0 released - 22 hours ago
0.91.0 released - 22 hours ago
0.90.0 released - 22 hours ago
0.89.0 released - 6 days ago

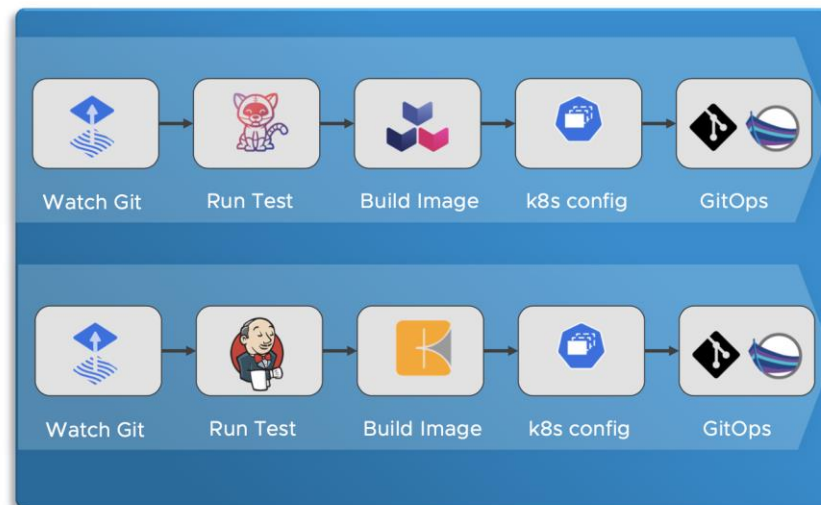
Consumes Builds Deploys

Latest Build
Build # 3
Build # 2
Build # 1



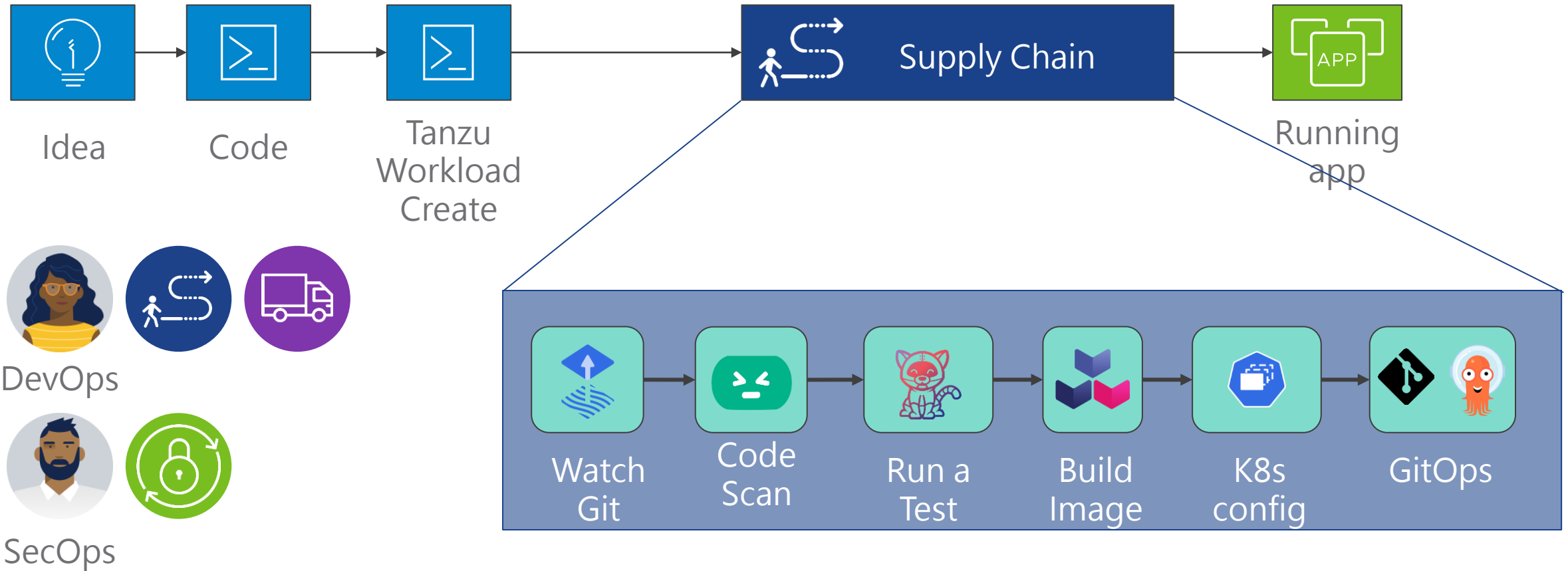
OPS EXPERIENCE

“我能夠基於強固的內部預設CI/CD流程部署完整端到端的版本流水線，並且能夠替換任一預設部分為我所需的工具”

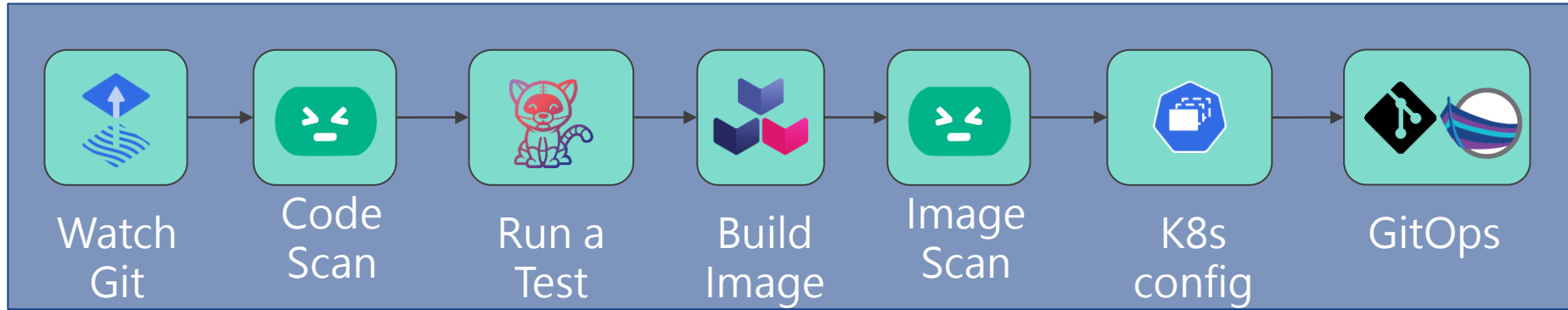


DevSecOp : Supply Chain 開箱即用可抽換的的軟體服務供應鏈

Tanzu Application Platform



開箱即用，並可進一步定制和替換

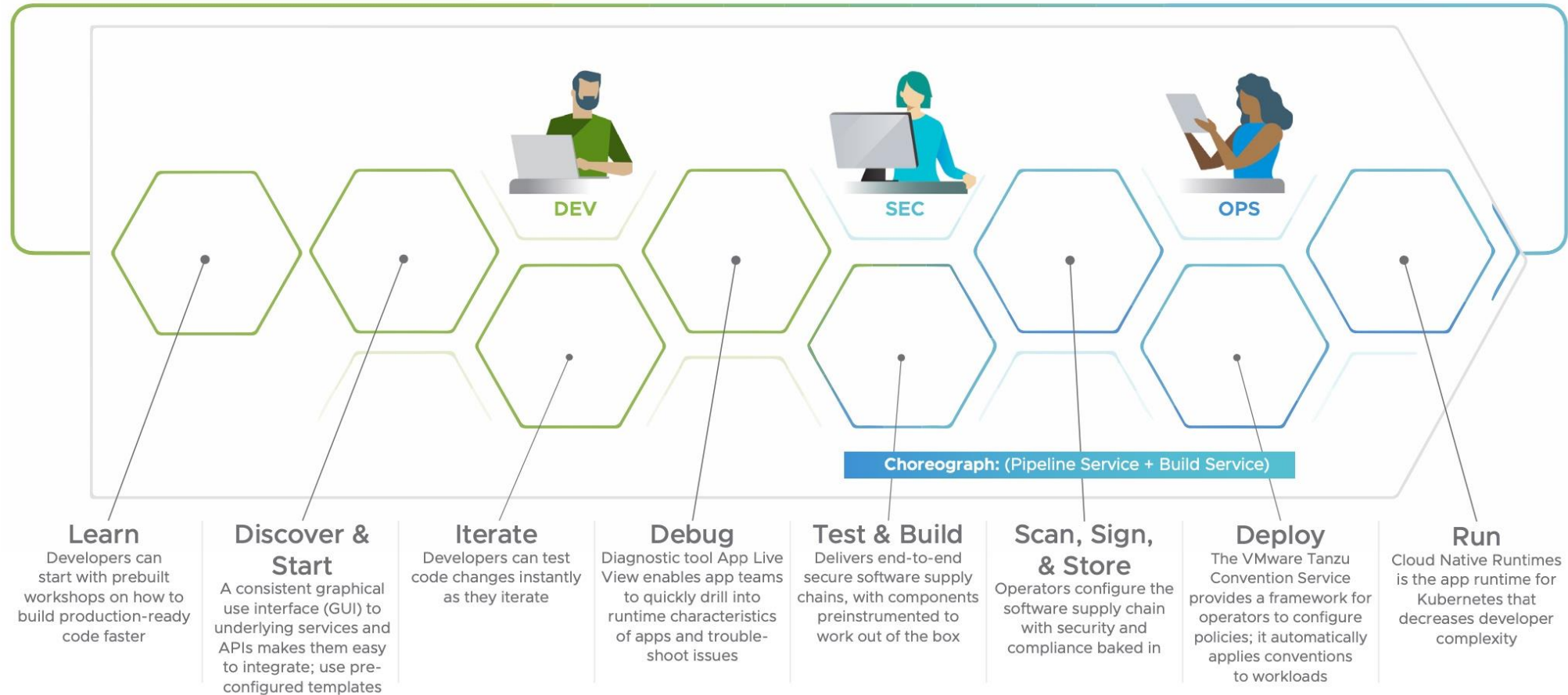


Tools	Day One		Future
	Batteries Included	Support	
GitOps	Flux		
CI	Tekton	Jenkins	GitHub Actions, GitLab CI, ConcourseCI
Continuous Deployment	Carvel kapp		ArgoCD, Spinnaker, Harness.io
Source Scanning	Anchore Grype		Carbon Black, Trivy OSS, Aqua Security, Black Duck
Image Scanning	Anchore Grype	Synk	

Try VMware TAP1.3

下載TAP1.3 建構安全的，可延展的，模組化且可運行在任何K8s上的應用開發平台

<https://network.tanzu.vmware.com/products/tanzu-application-platform/>



Tanzu Application Platform 安裝方式

TAP有兩種安裝的profile版本: Full / Lite, 客戶可自行選擇或更改

Capability	Full	Lite
API Portal	☑	✘
Application Accelerator	☑	☑
App Live View	☑	☑
Cartographer	☑	☑
Cloud Native Runtime	☑	☑
Convention Controller	☑	☑
Out of the Box Supply Chain - Basic	☑	☑
Out of the Box Delivery - Basic	☑	☑
Out of the Box Supply Chain - Testing	☑	☑
Out of the Box Supply Chains - Testing and Scanning	☑	✘
Out of the Box Templates	☑	☑
Developer Conventions	☑	☑
Flux Source Controller	☑	☑
Grype	☑	✘
Image Policy Webhook	☑	✘
Learning Center	☑	✘
Supply Chain Security Tools - Store	☑	✘
Supply Chain Security Tools - Scan	☑	✘
Services Toolkit	☑	☑
Service Bindings	☑	☑
Source Controller	☑	☑
Spring Boot Convention	☑	☑
Tanzu Build Service	☑	☑
TAP GUI	☑	☑
Tekton	☑	☑

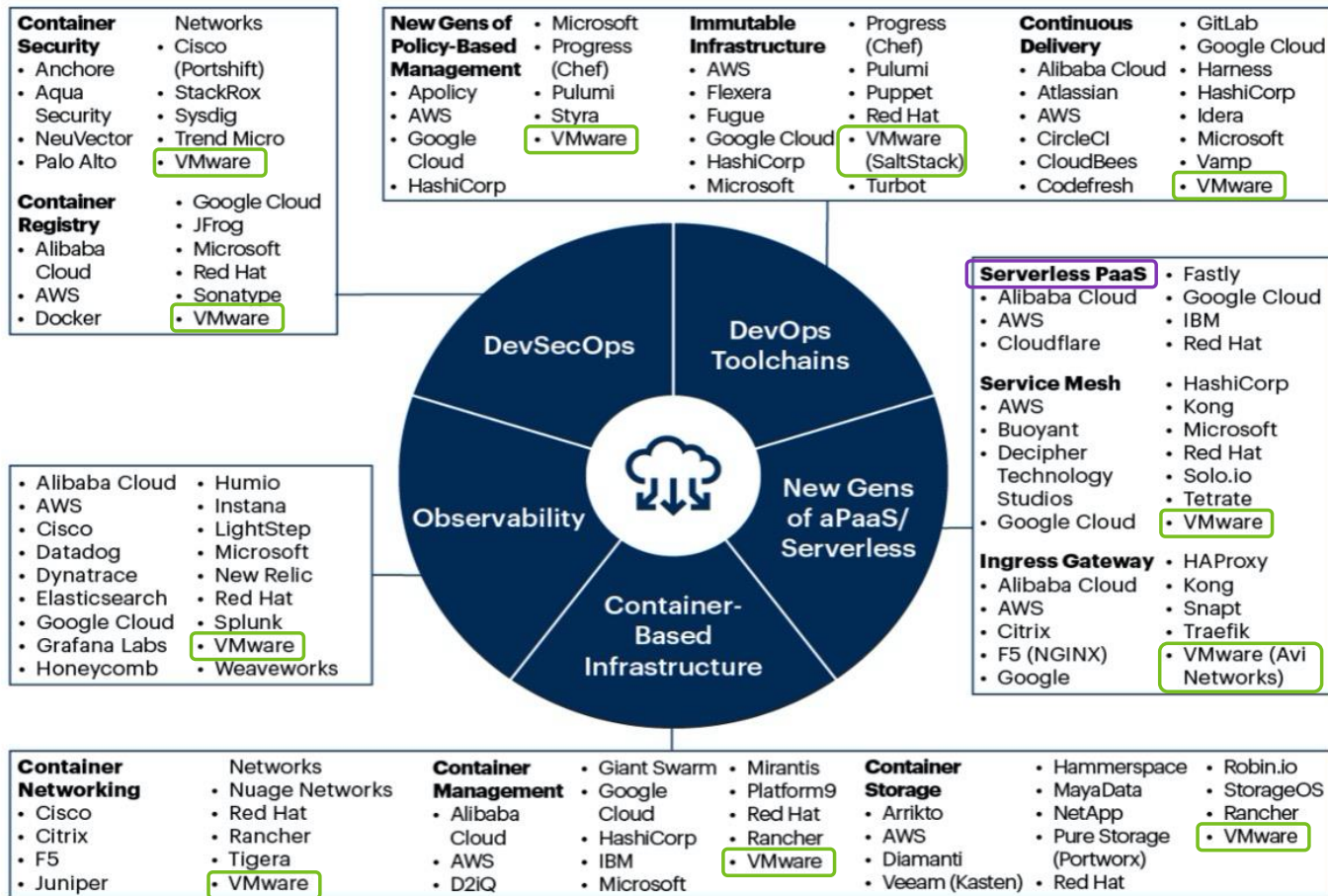
TAP有兩種安裝的profile版本: Full / Lite, 客戶可自行選擇或更改

- TAP安裝並不包含底層所需的K8s Runtime環境，可支援 Tanzu K8s、OCP4.7
- TAP 安裝最少需24vCPUs，視客戶所需功能可能需要更多的vCPUs
- Tanzu 應用平臺支援多雲環境，可在任何符合 API 標準的 Kubernetes 發行版上運行。
- ** 1vCPU = 1 AWS vCPU = 1 GCP core = 1 Azure vCore = 1 Hyperthread on bare-metal Intel processor with Hyperthreading = 1/2 Tanzu Edition Core

VMware Tanzu 簡化雲原生Cloud Native之旅的第一步

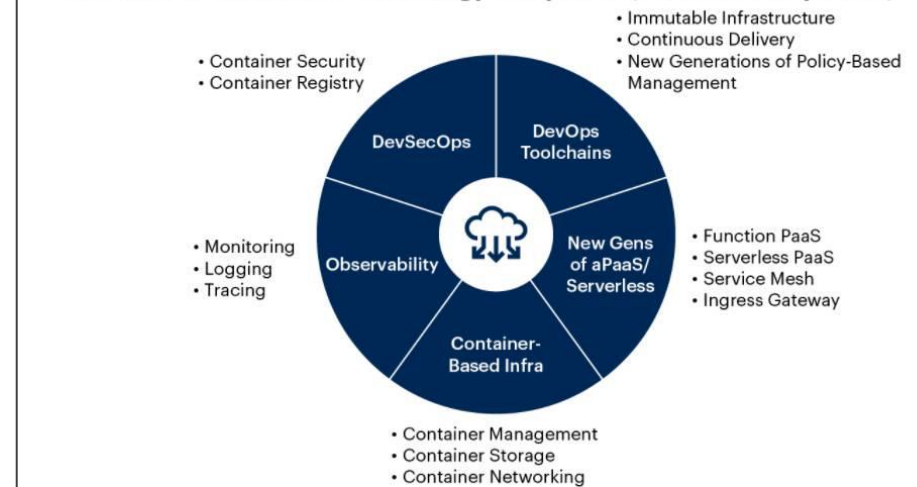
VMware是唯一一家廠商在CNCF開源生態系中有完整全面性的涵蓋

Cloud-Native Technology Ecosystems (Container Perspective) With Sample Vendors



- ✓ 提供符合CNCF conformant規範的企業級 Kubernetes 版本
- ✓ 提供企業級的K8s技術支援服務
- ✓ 提供K8s平台構建管理最佳實踐
- ✓ 提供K8s平台導入到生產環境搭建的專業顧問服務

Overview of Cloud-Native Technology Ecosystems (Container Perspective)



[SOURCE: Gartner; Market Trends: The Rise of Cloud-Native Technology Ecosystems (Container Perspective); November 2020; Wataru Katsurashima, Michael Warrilow, Sid Nag

Learn More



Where To Learn More

ModernApps Learning Courses from Tanzu

- <https://modernapps.ninja>

Learn Kubernetes. From Experts. For Free.

- <https://kube.academy/>

HOL-2133-01-MAP – Tanzu Kubernetes Grid

- <https://labs.hol.vmware.com/HOL/catalogs/catalog/1886>

Tanzu Kubernetes Grid Documentation:

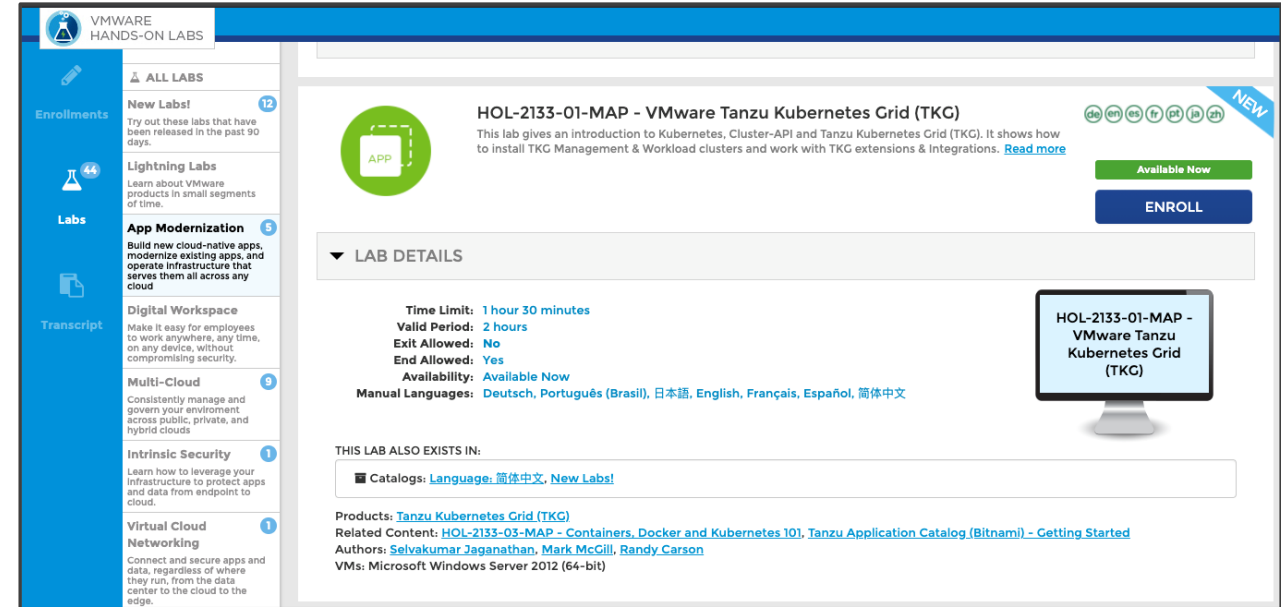
- <https://docs.vmware.com/en/VMware-Tanzu-Kubernetes-Grid/>

Technical content relating to Tanzu Kubernetes Grid

- <https://tanzu.vmware.com/blog>

Tanzu Application Platform documentation, demo and download

- <https://tanzu.vmware.com/application-platform>



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