



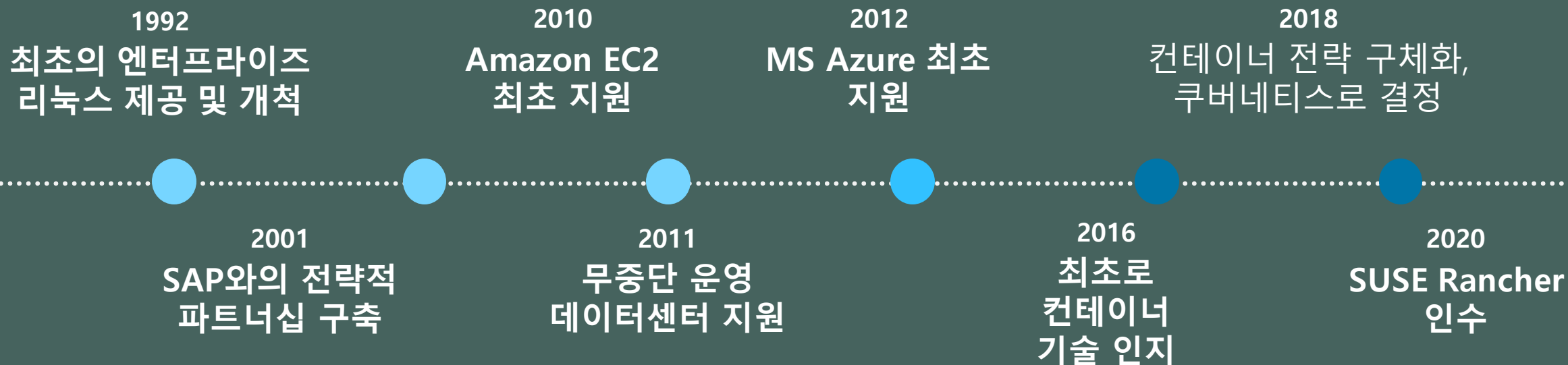
복잡한 멀티 쿠버네티스 클러스터 운영, 관리의 모든 것

# SUSE Rancher

최기원 부장 | SUSE Korea  
이동원 매니저 | OSC Korea

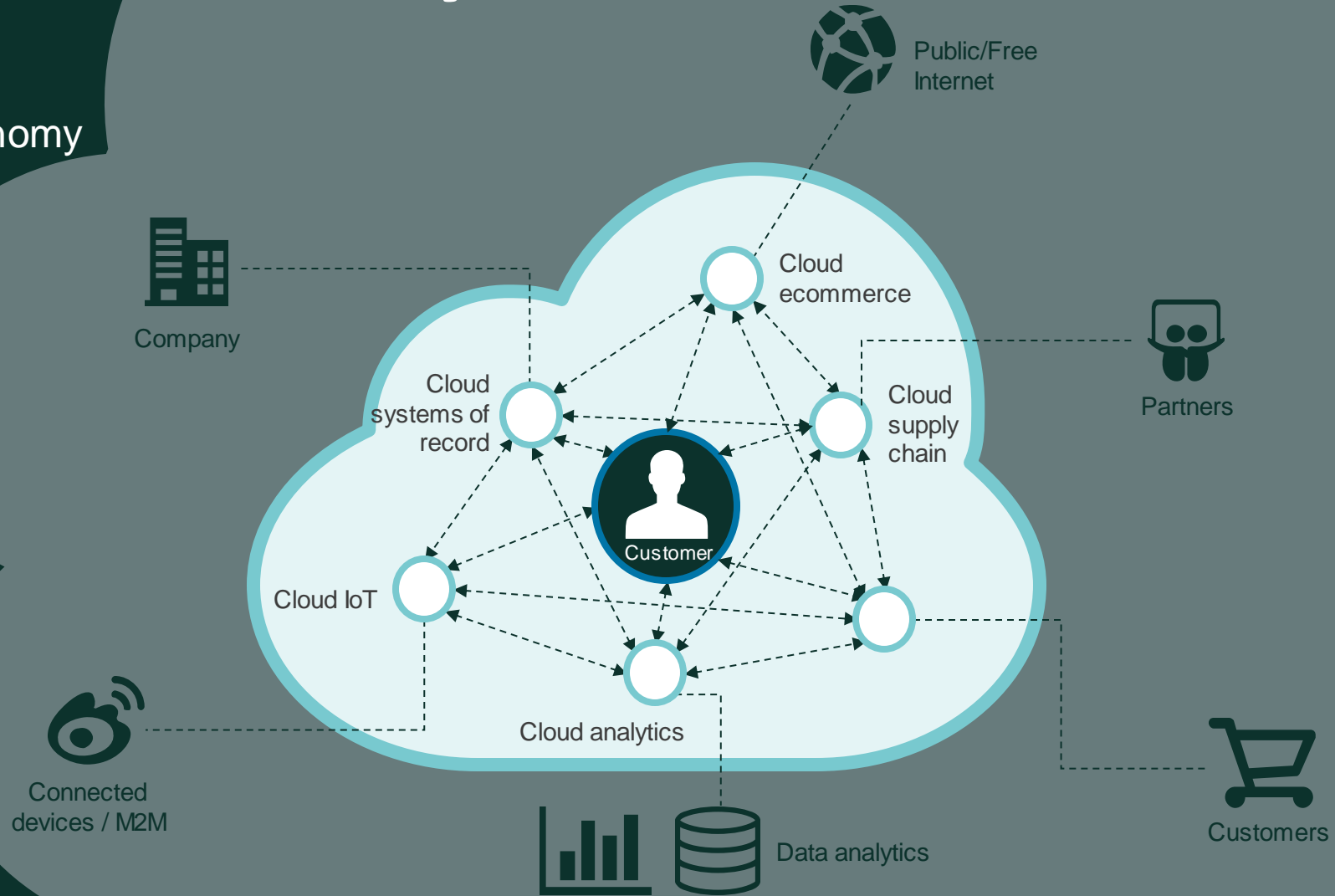


# About SUSE & Rancher



# The Cloud in Today's World

## Connected Economy



# 'Cloud-Native'가 기업에게 전하는 Message

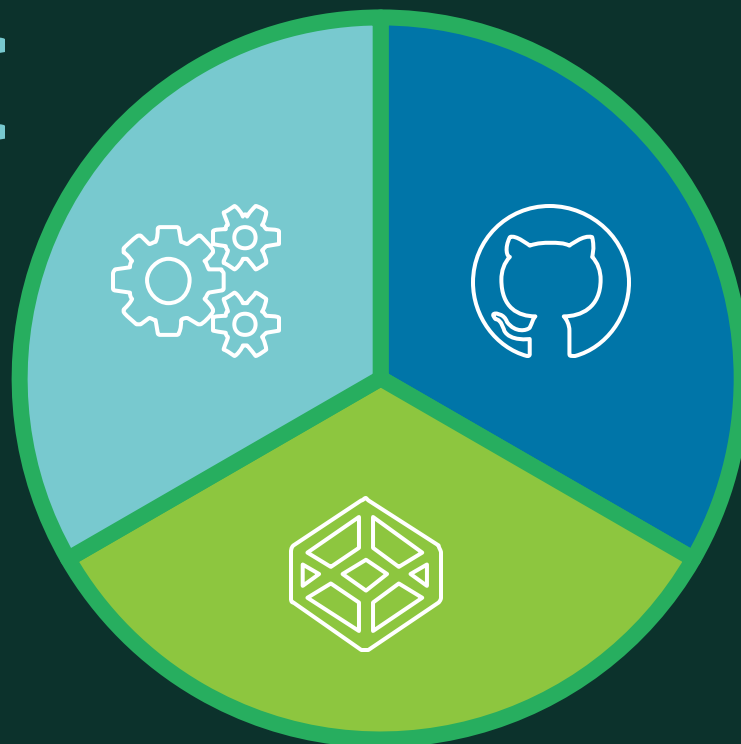
## DESIGN

- Shift from monolith to microservices
- Serverless architecture
- Speed and agility



## INFRASTRUCTURE

- Automation
- Scalability
- Portability
- Predictability
- Containerized applications
- Infrastructure-as-code

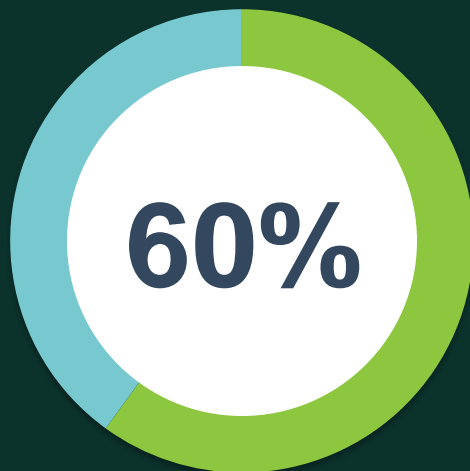


## DEVELOPMENT STYLE

- Rapid releases
- CI/CD
- DevOps practices
- Continuous customer feedback

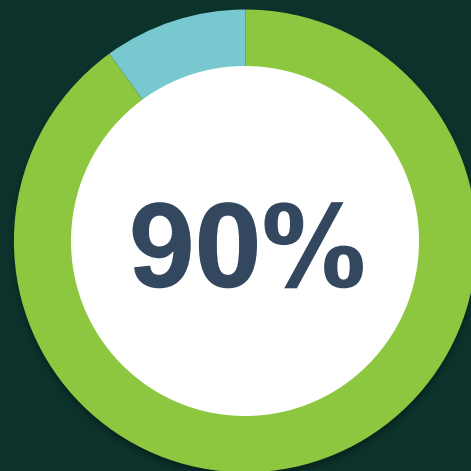


# 최근 컨테이너 영역의 시장 전망



## 가시성

+60% of developers have used containers for software development and containers are a top priority for IT leaders



## 기회

Less than 10% of applications are currently containerized - the opportunity is huge



## 성장

Expected growth of more than 50% in container adoption for new projects by end of 2021

FORRESTER®

# Why?

Kubernetes는 모든 인프라에서  
common computing 플랫폼으로 성장



# Kubernetes를 통한 주요 이점 실현을 목표

**1** 모든 인프라에 대해  
지속적으로 높은  
수준의 신뢰성 제공

**2** 표준화된 자동화를 통해  
DevOps 효율성 향상

**3** 모든 인프라에 대한 보안  
정책 적용 보장



# BUT! 대부분의 Kubernetes는...?



**1** 중앙집중식의 가시성  
확보 없이

**2** 일관된 보안 정책 없이

**3** 독립적인 관리 형태

# 점점 늘어나는 Kubernetes 클러스터...





SUSE |



RANCHER®



# SUSE RANCHER 가 제안하는 방식

Industry's only solution able to manage any certified Kubernetes distribution

- 1 중앙집중식의 가시성 확보
- 2 Kubernetes Cluster 통합 관리 제공
- 3 일관된 보안 정책 적용 가능

# SUSE RANCHER Enables Production Quality Kubernetes Everywhere

Containerized App 1

Containerized App 2

Containerized App 3

## Platform Services (Build & Run)

Rancher Catalog



Monitoring & Alerts



Dashboards & Observability



Service Mesh



Terraform Operator



Longhorn Storage



## Security & Authentication



Active Directory

GitHub

SAML

Ping Identity

Okta

## Policy Enforcement & Governance

Centralized Audit

Monitoring & Logging

CIS Benchmarking

RBAC, OPA, Pod & Network Policies

## Simplified Cluster Operations & Infrastructure Management (Run & Manage)

Kubernetes version management

Dashboard, Monitoring & Diagnostics

Advanced Infrastructure Monitoring & Alerting

Cluster Templates & Config Enforcement

Node Pool Management

Cluster Provisioning & Lifecycle Management



RKE



Datacenter



Amazon EKS



Azure AKS



Google GKE



Cloud



K3S



Dev

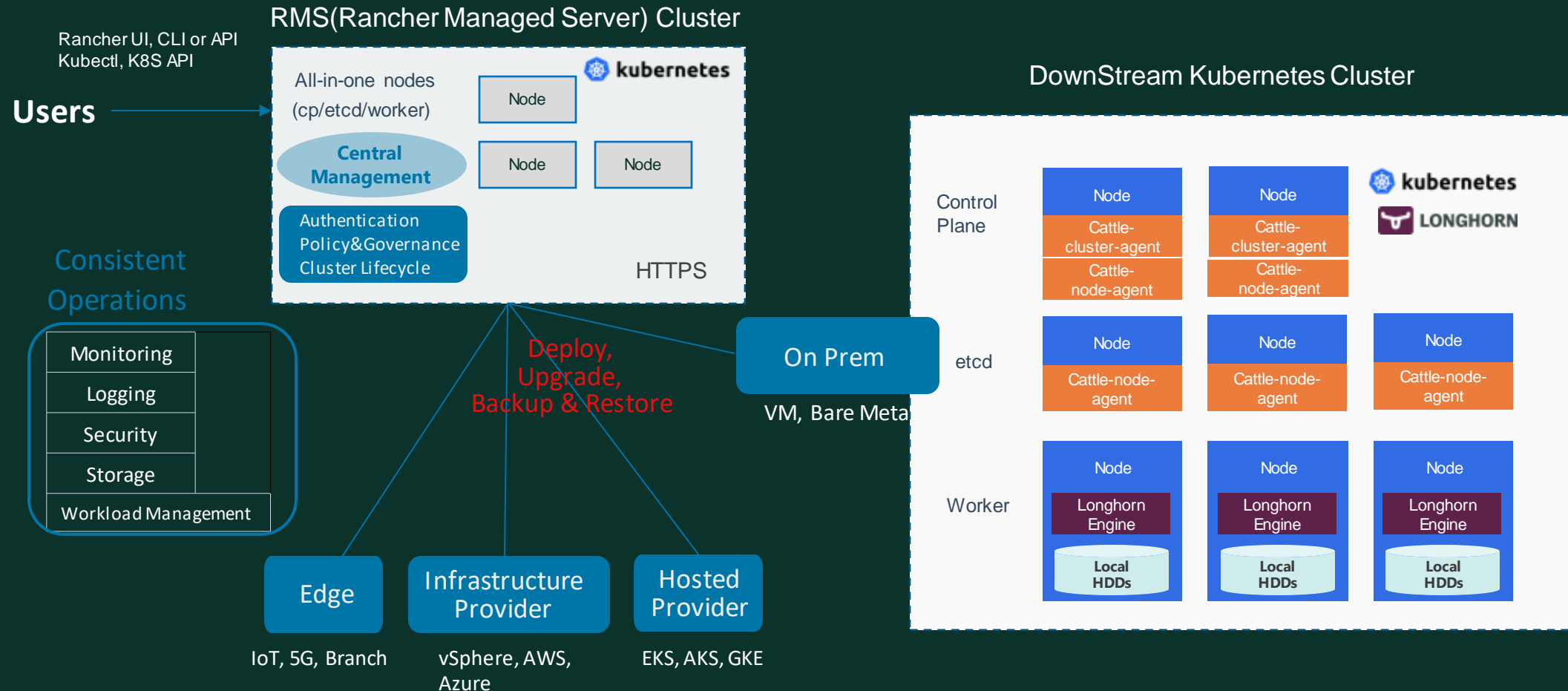


Branch



Edge

# SUSE RANCHER Architecture



# SUSE RANCHER SLA & Certified

	Rancher SLA	Certified Integrations
Authentication & Authorization		Microsoft Active Directory, okta, GitHub, OpenLDAP
App Management & CI/CD	HELM, FLEET	Jenkins, GitLab, Bamboo, Drone
Monitoring & Logging	Grafana, Prometheus, fluentd	splunk, DATADOG, Sysdig, elasticsearch
Registry & Image Scanning		REGISTRY, HARBOR, Frog Artifactory
Container Security & Secrets		aqua, PRISMA, HashiCorp
Networking & Service Mesh	flannel, canal, Istio	traefik, NGINX, CALICO, LINKERD
Platforms & Orchestration	RANCHER, K3S, RKE	GKE, AKS, AmazonEKS, HashiCorp Terraform
Persistent Storage	LONGHORN	portworx, OpenEBS, STORAGEOS
Container Engine	docker, containerd	
Operating Systems		Windows, SUSE, ubuntu, Red Hat
Infrastructure Drivers		vmware, aws, Azure, openstack

# Products & Projects

COMMERCIALY SUPPORTED  
PRODUCTS



Flagship product - world's most popular  
Kubernetes Management platform



A CNCF-certified Kubernetes distribution  
that runs entirely within Docker containers



A CNCF-certified, Lightweight Kubernetes  
distribution. Easy to install, half the memory, all  
in a binary less than 100MB



Highly available persistent block storage for  
microservices-based, stateful applications



Hosted Rancher control plane available to  
99.9% uptime SLA. Add-on to Platinum  
subscription



Deploy & manage thousands to  
millions of clusters at the network  
edge

OPEN SOURCE  
PROJECTS



Securely build, test, deploy, scale  
and version stateless app in any  
K8s cluster



Simplifies Kubernetes  
operations in low-resource  
computing environments



Built to connect overlay networks  
of different Kubernetes clusters



Hyper-converged infrastructure (HCI)  
software built on Kubernetes. It is an  
open source alternative to vSphere  
and Nutanix.

# RKE – Rancher Kubernetes Engine

- 업스트림 Kubernetes 배포
- CNCF 인증
- 쉬운 선언적 Kubernetes 구성 프레임 워크
- 베어 메탈 또는 VM의 모든 주요 Linux 배포판 지원
- 백업 및 재해 복구 기능
- **Reliable, Zero-Downtime Cluster Upgrades**

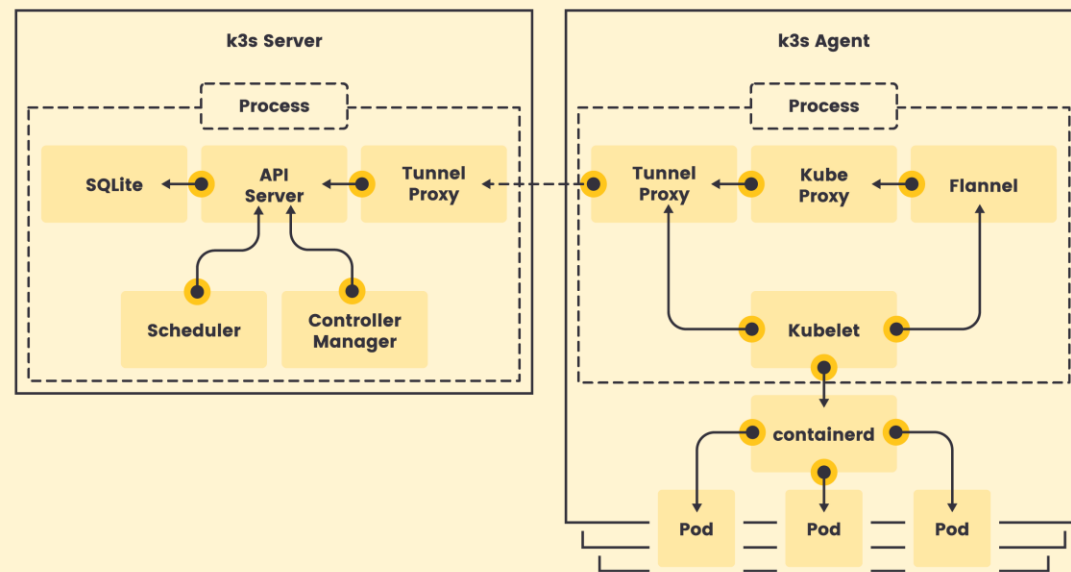


# K3s – 경량화 쿠버네티스

- **Perfect for Edge** – Edge의 프로덕션 워크로드를 위해 설계된 고가용성 인증 Kubernetes 배포판
- **Simplified & Secure** – 프로덕션 Kubernetes 클러스터를 설치, 실행 및 자동 업데이트에 필요한 종속성과 단계를 줄이는 단일 바이너리(<40MB)로 패키지 제공
- **Optimized for ARM**
  - ARM64 및 ARMv7 모두 지원



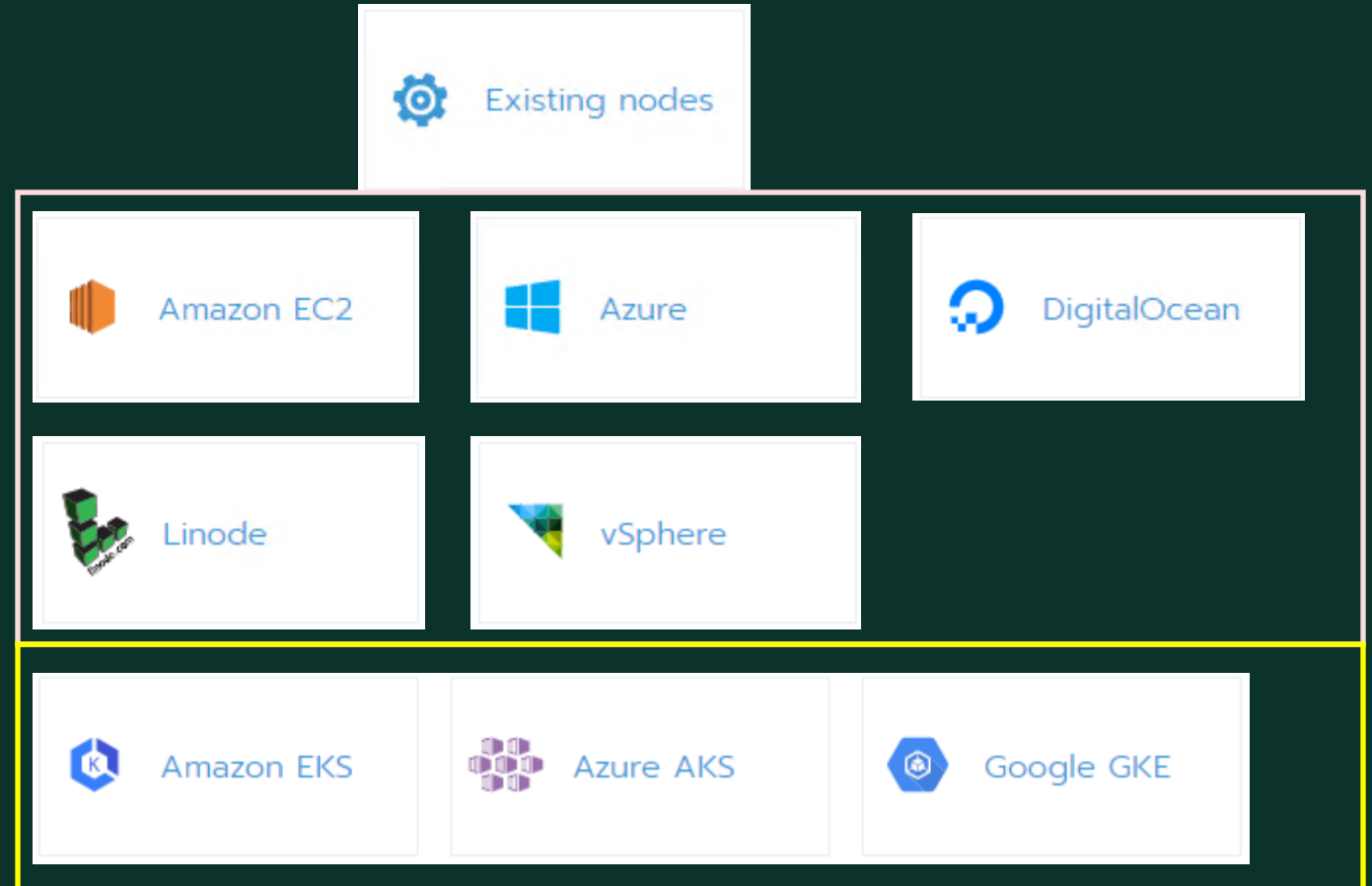
K3S



# Rancher Feature Highlight 1

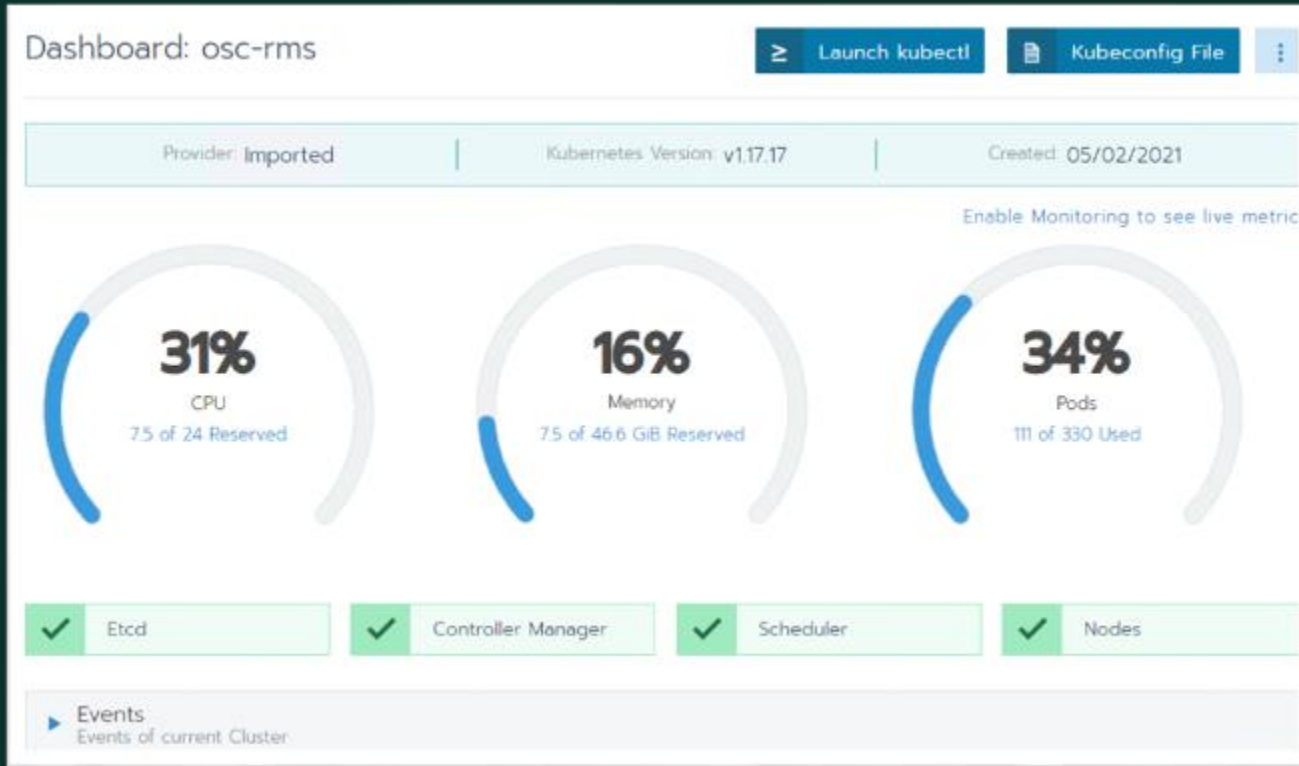
## Install Everywhere

- 베어 메탈 서버 또는 가상 머신에 새로운 Kubernetes 클러스터 배포 지원
- Public Cloud Provider infrastructure에 설치 가능
- Hosted Kubernetes Provider



## Rancher Feature Highlight 2

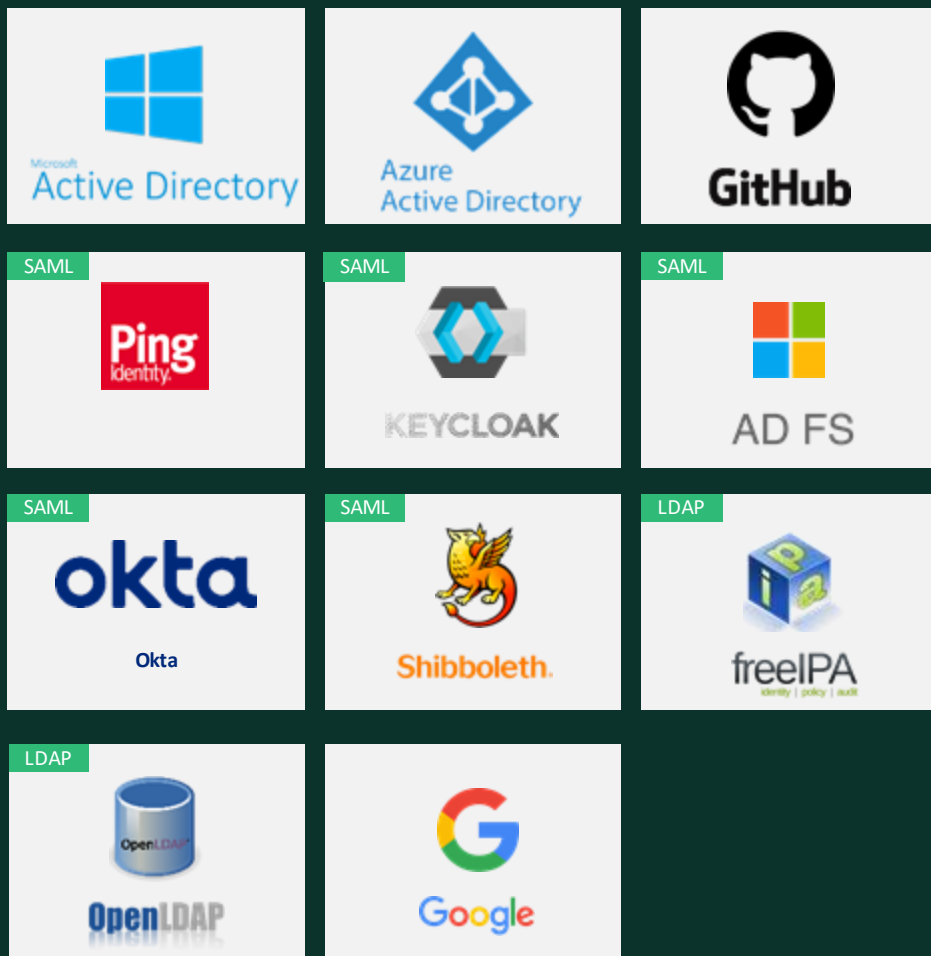
# Cloud Operations & Management



- 일관된 UI 및 API를 사용하여 모든 인프라 공급자에 Kubernetes 프로비저닝 가능
- 업그레이드, 확장 및 재해 복구를 포함하여 전체 클러스터 life-cycle 관리 제공
- AWS EKS, Google GKE, Azure AKS 와 같은 First-Class 클라우드 Kubernetes 지원 가능
- 자동화 및 3<sup>rd</sup> party 서비스 통합을 위한 강력한 API 제공

## Rancher Feature Highlight 3

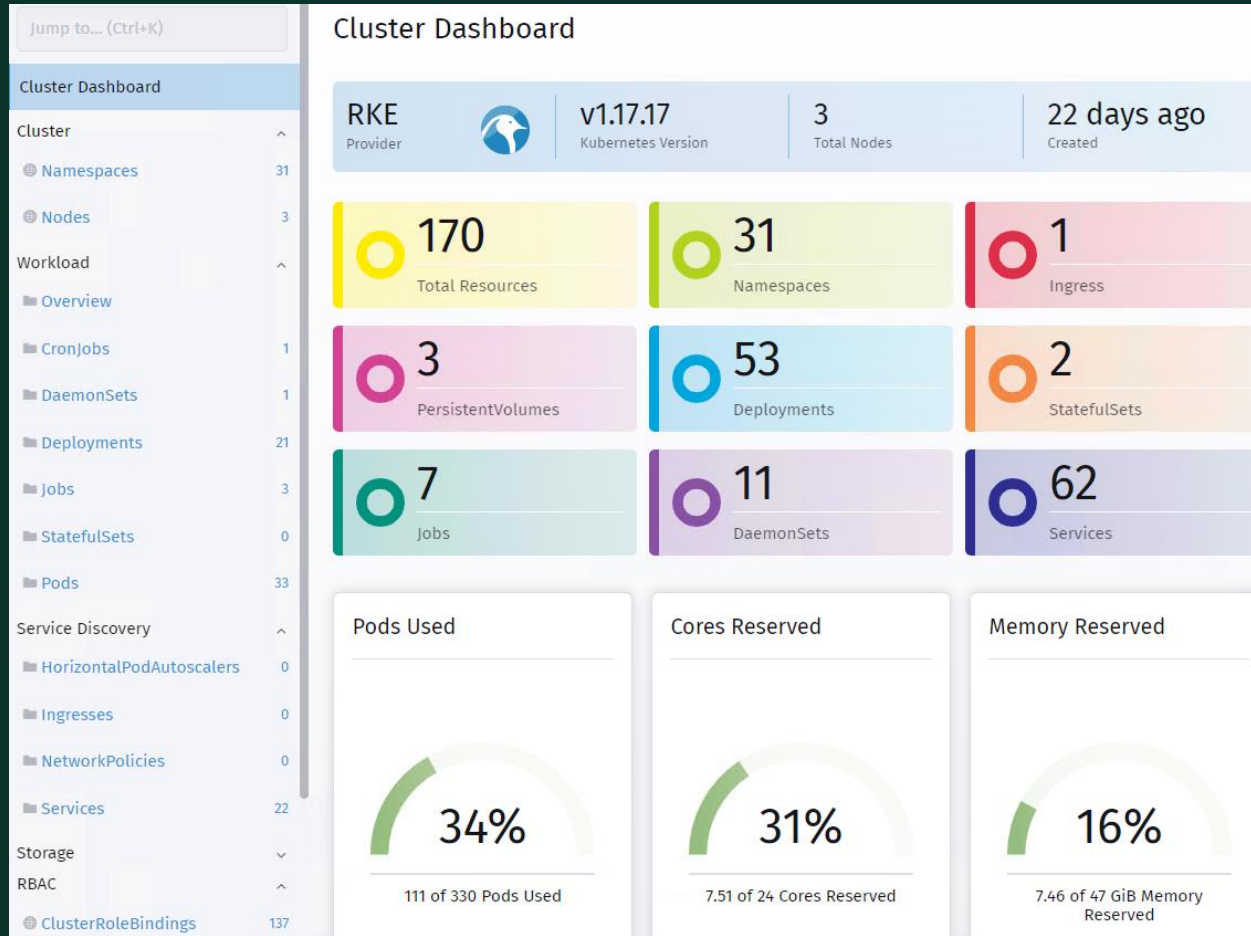
# Unified Access Control, Security and Policy Management



- 기존 엔터프라이즈 auth 공급자와 모든 Kubernetes 환경의 간편한 통합 (AD, LDAP, Keycloak, etc.)
- 효율적인 중앙 집중식 접근 제어 관리 (building on Kubernetes RBAC)
- Multi-tenant clusters 관리 (Rancher Projects)
- Security and network policies의 중앙집중식 관리
- RKE 클러스터 템플릿, CIS 벤치마크 규정 준수 검사 및 OPA 정책 관리를 통해 클러스터 강화

## Rancher Feature Highlight 4





# Workload Management



- GUI를 통해 Kubernetes 워크로드 및 클러스터 리소스를 관리
- Helm을 기반으로 어플리케이션 통합 카탈로그 제공
- 로그 배송, 모니터링, 서비스 메시, 지속적인 딜리버리 등 추가 기능 서비스의 턴키(Turn-key) 구성방식

# Rancher Feature Highlight 5

## Embedded Catalog

 <p><b>Alerting Drivers</b> The manager for third-party webhook receivers used in Prometheus...</p>	 <p><b>CIS Benchmark</b> The cis-operator enables running CIS benchmark security scans on a...</p>	 <p><b>External IP Webhook</b> Deploy the external-ip-webhook to mitigate k8s CVE-2020-8554</p>	 <p><b>Istio</b> A basic Istio setup that installs with the istioctl. Refer to...</p>
 <p><b>Logging</b> Collects and filter logs using highly configurable CRDs. Powered by Banzai...</p>	 <p><b>Longhorn</b> Longhorn is a distributed block storage system for Kubernetes.</p>	 <p><b>Monitoring</b> Collects several related Helm charts, Grafana dashboards, and...</p>	 <p><b>OPA Gatekeeper</b> Modifies Open Policy Agent's upstream gatekeeper chart that...</p>
 <p><b>Rancher Backups</b> Provides ability to back up and restore the Rancher application running on an...</p>	 <p><b>vSphere CPI</b> vSphere Cloud Provider Interface (CPI)</p>	 <p><b>vSphere CSI</b> vSphere Cloud Storage Interface (CSI)</p>	 <p><b>artifactory-ha</b> Universal Repository Manager supporting all major packaging formats,...</p>
 <p><b>artifactory-jcr</b> JFrog Container Registry</p>	 <p><b>citrix-adc-istio-ingress...</b> A Helm chart for Citrix ADC as Ingress Gateway installation in Istio Servic...</p>	 <p><b>citrix-cpx-with-ingress...</b> A Helm chart for Citrix ADC CPX with Citrix ingress Controller running as...</p>	 <p><b>citrix-k8s-cpx-ingress-c...</b> A Helm chart for Citrix ADC CPX with Citrix ingress Controller running as...</p>
 <p><b>cloudcasa</b> CloudCasa backup service for Kubernetes and cloud native applications</p>	 <p><b>cockroachdb</b> CockroachDB is a scalable, survivable, strongly-consistent SQL database.</p>	 <p><b>control-agent</b> Control Agent for managing StreamSets Control Hub Deployments</p>	 <p><b>cost-analyzer</b> A Helm chart that sets up Kubecost, Prometheus, and Grafana to monitor cloud...</p>











## Rancher Feature Highlight 5

# Embedded Catalog - Monitoring

Marketplace에서 설치된 App은 바로 Dashboard를 통해 접속 가능

### Dashboard

Powered By: [Prometheus](#)

 Alertmanager  Active Alerts	 Grafana  Metrics Dashboards
 Prometheus Graph  PromQL Graph	 Prometheus Rules  Configured Rules
 Prometheus Targets  Configured Targets	

## Rancher Feature Highlight 5

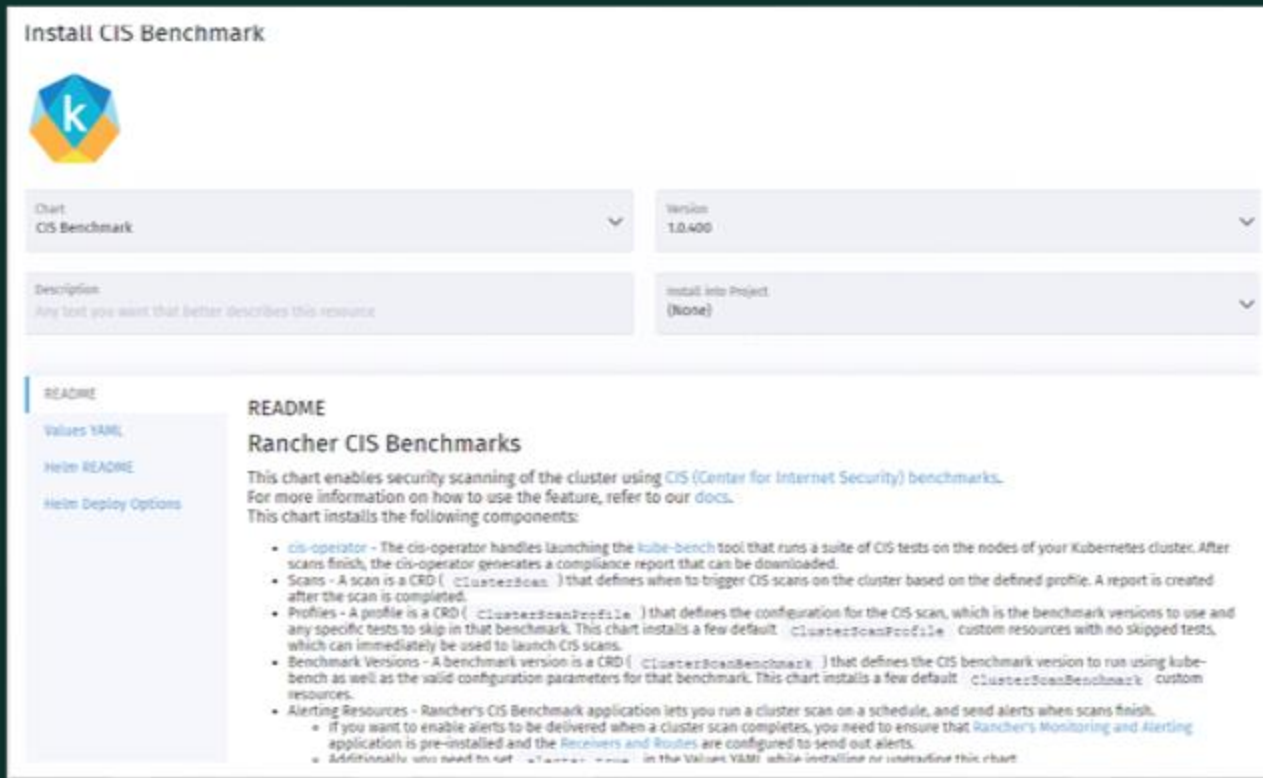
# Embedded Catalog - Monitoring



## Rancher Feature Highlight 5

# Embedded Catalog – CIS Benchmark

SUSE Rancher 보안 스캔을 위해 CIS(Center For Internet Security) Benchmark를 Helm을 통해 설치



**Install CIS Benchmark**

Chart: CIS Benchmark | Version: 1.0.400

Description: Any text you want that better describes this resource | Install into Project: (None)

**README**

Values YAML | Helm README | Helm Deploy Options

**README**

### Rancher CIS Benchmarks

This chart enables security scanning of the cluster using CIS (Center for Internet Security) benchmarks. For more information on how to use the feature, refer to our docs.

This chart installs the following components:

- **cis-operator** - The cis-operator handles launching the kube-bench tool that runs a suite of CIS tests on the nodes of your Kubernetes cluster. After scans finish, the cis-operator generates a compliance report that can be downloaded.
- **Scans** - A scan is a CRD ( `ClusterScan` ) that defines when to trigger CIS scans on the cluster based on the defined profile. A report is created after the scan is completed.
- **Profiles** - A profile is a CRD ( `ClusterScanProfile` ) that defines the configuration for the CIS scan, which is the benchmark versions to use and any specific tests to skip in that benchmark. This chart installs a few default `ClusterScanProfile` custom resources with no skipped tests, which can immediately be used to launch CIS scans.
- **Benchmark Versions** - A benchmark version is a CRD ( `ClusterScanBenchmark` ) that defines the CIS benchmark version to run using kube-bench as well as the valid configuration parameters for that benchmark. This chart installs a few default `ClusterScanBenchmark` custom resources.
- **Alerting Resources** - Rancher's CIS Benchmark application lets you run a cluster scan on a schedule, and send alerts when scans finish.
  - If you want to enable alerts to be delivered when a cluster scan completes, you need to ensure that Rancher's Monitoring and Alerting application is pre-installed and the **Receivers and Routes** are configured to send out alerts.
  - Additionally you need to set `enableAlerting: true` in the Values YAML while installing or updating this chart.

- Rancher를 통해 배포된 Downstream Cluster에 대해서 CIS Benchmark에 정의된 프로파일에 따라 보안 적용 확인
- Hosted Kubernetes Provider(EKS/AKS/GKE)에 배포된 Kubernetes에 대한 scan 기능 제공
- 최신버전 Rancher부터 RKE2 & K3S에 대한 점검 가능

# Rancher Benefit Features

## Multi-cluster Management

다양한 Kubernetes Cluster에 대한 쉽고 간편한 관리기능 제공

## Edge

Edge환경을 위한 K3S에 최적화

## 100% Open Source

Rancher는 100% 오픈소스로 벤더 Lock-in이 없는 제품



## Centralized Global Service

대시보드는 제품 및 서비스에 대한 Single Point 역할을 수행

## Installs Everywhere

Full lifecycle management  
public cloud Kubernetes offerings

## Scaled Management

규모에 상관없는 일관적 클러스터 제어

# 글로벌 앱현대화 기반 구축을 위한 Continental AG사의 선택



- 마이그레이션 시간 80% 단축
- 업그레이드 시간 80% 단축: 몇일→몇시간
- 비용 절감 — 현장 서버/애플리케이션을 클라우드/데이터센터로 통합
- 45개 지역을 아우르는 글로벌 통합 개발 플랫폼 제공



독일에 본사를 둔 150년  
역사의 글로벌 자동차 부품  
생산 기업

59개국 232,000여 임직원

## Legacy Transformation

콘티넨탈사의 제조 인프라를 민첩한 클라우드 네이티브 플랫폼 아키텍처로 전환하여 온프레미스와 클라우드 워크로드를 단일한 UI에서 운영

## Creating a Global Infrastructure Platform

전세계 45개 지역에 흩어져 있는 수백명의 개발팀에 개발 및 운영 환경을 지원하는 컨테이너화된 단일 플랫폼

## Long Term Cost Reduction

Shop floor의 라인에서 운영되는 값비싼 서버들을 클라우드와 데이터센터로 통합

# Rancher Demo



# About OCS Korea

OSC Korea는 디지털 트랜스포메이션 전문기업입니다.  
 고객에게 혁신적이고 이상적인 모던 아키텍처와 최적화된 기술을 제공합니다.

## 한국 리눅스 재단 운영

- 국내 오픈소스 생태계 활성화 지원
- CNCF, Cloud Foundry, Hyperledger, LFEEdge, LFAI, LFPH 등 후원



## MSA(Microservice) 전문기업

- 오픈소스 기반 아키텍처 컨설팅 및 구축
- 다양한 MSA 방법론에 기반한 Modern Architecture 설계 지원



## 글로벌 솔루션 공급

- 디지털 트랜스포메이션에 필요한 글로벌 솔루션 발굴
- 고객 요구사항 및 시장 환경에 부합하는 최적의 솔루션 통합 제공

Gremlin



CONFLUENT



Auth0

INSTANA



kubecost

AxonIQ



sonatype

LENSES

# Rancher Demo 환경

## RANCHER Management Server(RMS)

- AWS EC2 기반 - 2vCPU / 4 GiB / 20GB DISK
- OS SUSE Linux - 15 SP2
- Docker Version – 19.03.13
- Rancher Release - 2.5.8

## Downstream Cluster-1

- AWS EC2 기반 - 8vCPU / 32 GiB / 20GB DISK
- OS SUSE Linux - 15 SP2
- Docker Version – 19.03.13
- CTRL 3 / Worker 2

## Downstream Cluster-2

- AWS EKS 기반 - 8vCPU / 32 GiB / 20GB DISK
- OS SUSE Linux - 15 SP2
- Docker Version – 19.03.13
- CTRL 3 / Worker 2

# Rancher Demo 시나리오

1. Rancher Server에서 제공하는 전반적인 UI와 대시보드 확인 방법
2. Rancher를 통해서 다양한 클라우드 환경에서 멀티 클러스터를 구성하고 운영하는 방법
3. Rancher의 마켓플레이스를 활용하여 쉽게 애플리케이션을 배포

# Rancher Demo



# 감사합니다