



클라우드 지능화 관리를 통한 앱 서비스 최적화

Optimize App Performance with Price Control on multi-cloud

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Mar 2021

Cloud Market Insight



코로나 팬데믹으로
클라우드를 가속화

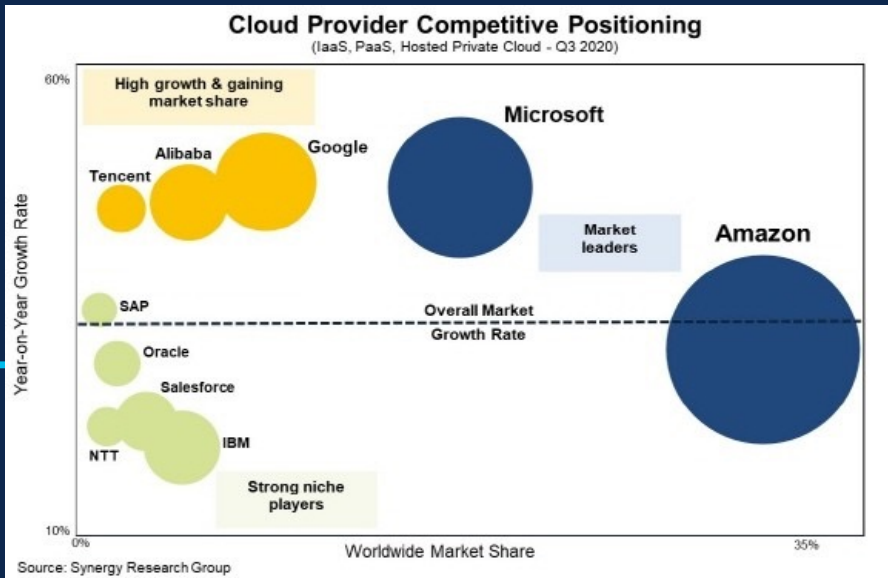
HOW DOES
COVID-19 IMPACT
CLOUD ADOPTION?

40%

NOW ACCELERATING THEIR
MOVE TO THE CLOUD

IT decision makers are
turning to cloud-ready solutions
as a result of COVID-19

- AWS (33% Market Share 29% YoY)
- MS Azure (18% Market Share 12% YoY)
- Google (44% YoY)



개발자를 위한
클라우드 서비스

개발 플랫폼 (PaaS)

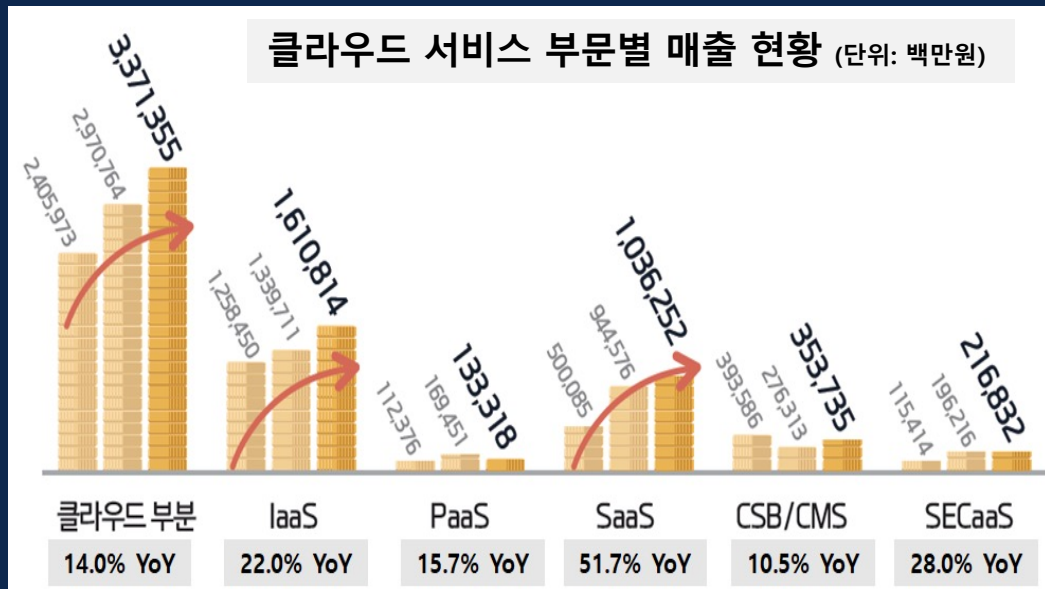
다양한 라이브러리(API)



Cloud Market Insight

- 기업을 **디지털전환**과 정부 **디지털 뉴딜** 사업 활성화로 클라우드 사업 가속화
- 2019년 국내 클라우드 시장 규모 **연 14% 성장을 통한 3.3조원 형성**
- 단계별 클라우드 전환 및 **Hybrid** 클라우드 구축을 위한 **Private** 급성장

클라우드 서비스 부문별 매출 현황 (단위: 백만원)

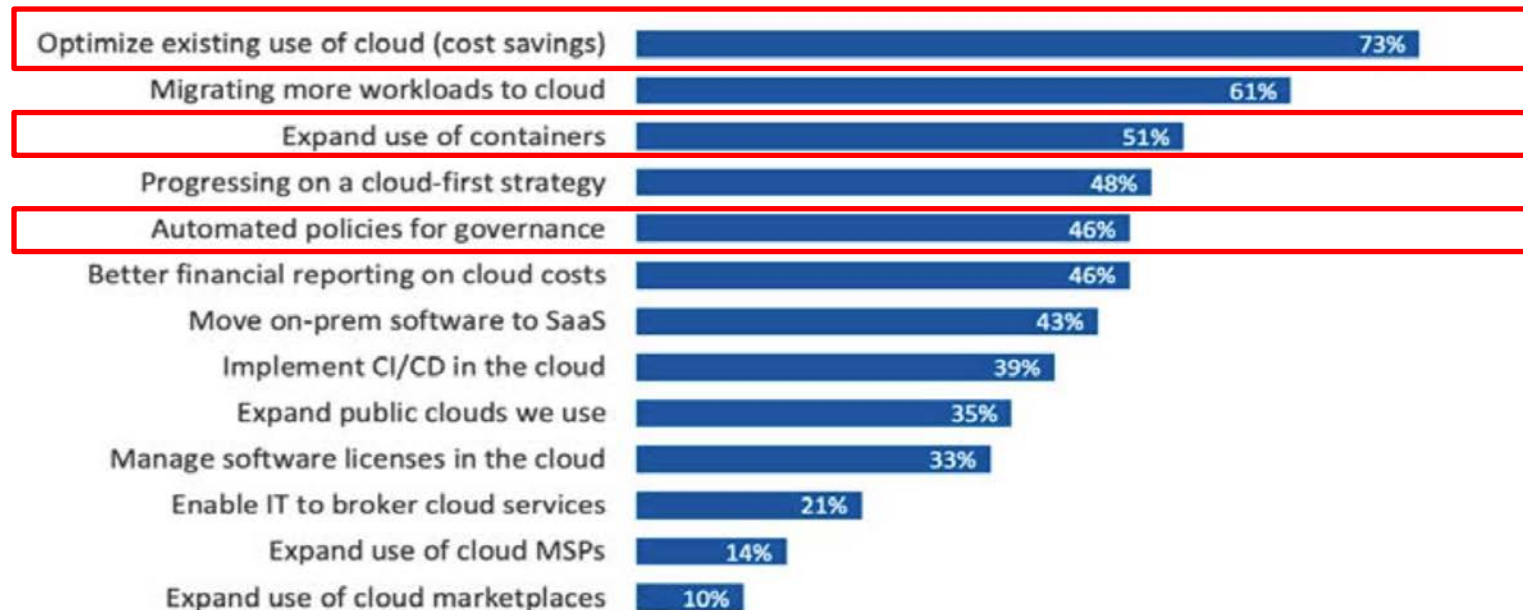


구분	2020년		2019년		비고
	매출액	YoY 성장률	매출액	YoY 성장률	
클라우드 서비스	3,371,355	14.0%	2,970,764	14.0%	
IaaS	1,610,814	22.0%	1,399,711	22.0%	
PaaS	133,318	15.7%	169,451	15.7%	
SaaS	1,036,252	51.7%	944,576	51.7%	
CSB/CMS	353,735	10.5%	276,313	10.5%	
SECaaS	216,832	28.0%	196,216	28.0%	

Cloud Market Insight

Top Cloud Initiatives for 2020

% of all respondents



N=750

Source: Flexera 2020 State of the Cloud Report

Let's Optimize Cloud Service with Price Control



Let's Optimize Cloud Service with Price Control

1 Abstraction

앱 워크로드와
인프라간 상호 연관성
및 의존성 파악

Applications



Infrastructure



2 Analytics

수요/공급 시장 모델의
앱 성능 최적화 위한
인프라 요건 및 비용 분석

Application
resource
demand



Infrastructure
supply



3 Automation

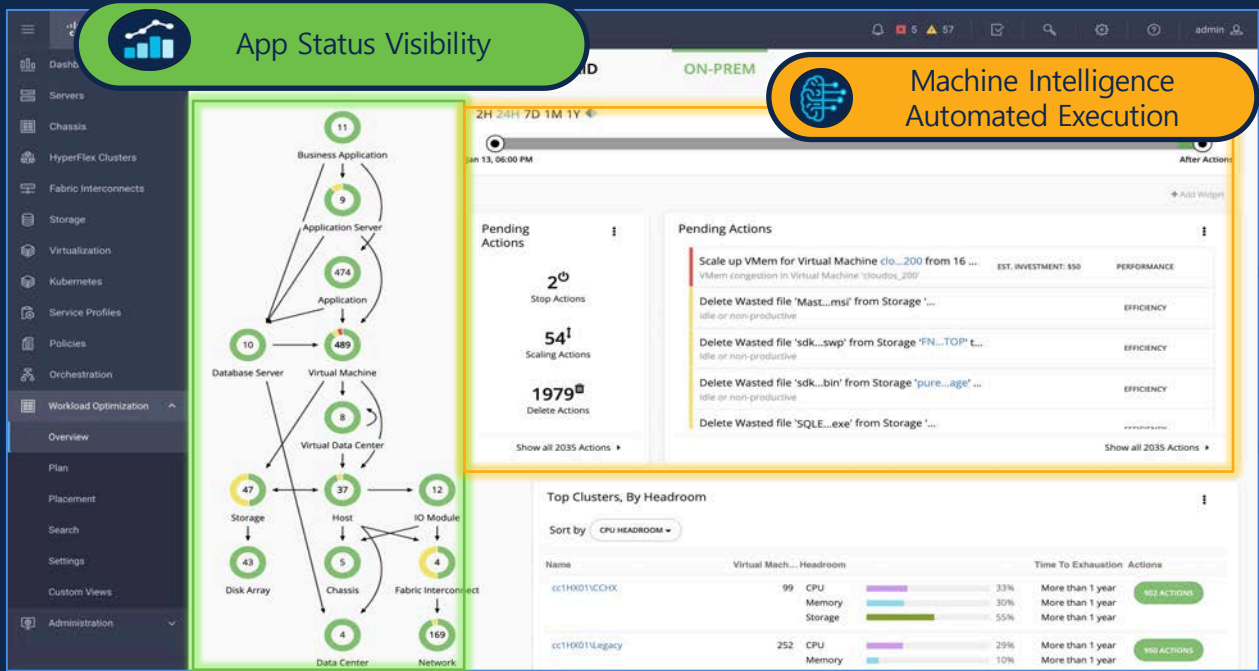
실시간 서비스 성능 분석
성능 개선 및 비용 최적화
방향 제시 및 자동화 구현

- Sizing Recommendation
- Auto Provisioning
- Retiring Resource



Let's Optimize Cloud Service with Price Control

Cisco IWO (InterSight Workload Optimizer)



Full visualization / apps and infra
Mapping of complex interdependencies

Real-time, AI-powered analytics
Continuous balancing between performance and cost

Actionable recommendations
Automated, real-time actions

실시간 앱 서비스 직관성
및 자원 관리 단순화

지속적 OPEX 비용 절감 및
투자 예방 효과

지속적 변경 관리로 성능
최적화 및 리스크 예방

Let's Optimize Cloud Service with Price Control

Cisco IWO (InterSight Workload Optimizer)

AWS Trusted Advisor:

- Cost Optimization*
- Performance Alerts*
- Security
- Fault Tolerance*
- Service Limits

Amazon EC2 Resource Optimization Recommendations

(Introduced on July'19)

- Size-down recs.
- Idle Instances Suspend recs.

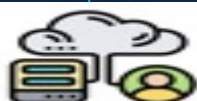
AWS Compute Optimizer

(Introduced on Nov.'19)

- Size-down recs.
- Size-up recs.



Application-Driven Optimization



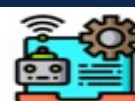
Hybrid & Multicloud



Automation & Approval Workflow



Containers Optimization



Advanced Analytics Engine



Let's Operate Kubernetes at scale intelligently

Cisco IWO (InterSight Workload Optimizer)



How should you **size containers**?



When do you need to **reschedule (move) pods**?
To which nodes?



When do you need to **scale out (or back) the cluster**?
By how much?



Do you have **enough capacity to onboard**
new services?



kubernetes

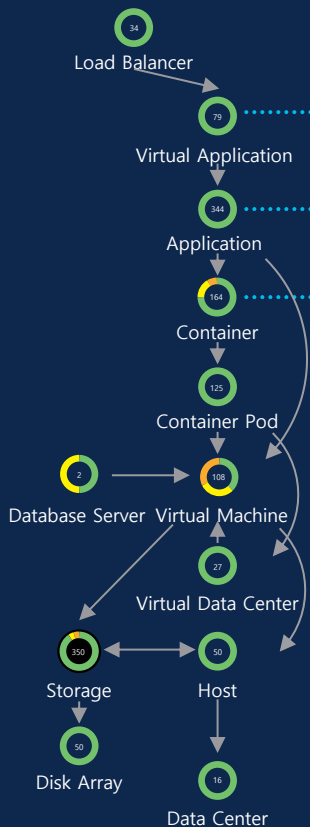
41%

Identified complexity as a top challenge
in using and deploying containers.

Source: [Cloud Native Computing Foundation Survey 2020](#)

Let's Operate Kubernetes at scale intelligently

Cisco IWO (InterSight Workload Optimizer)



Intelligent sizing

- Provision Virtual Machine tun VCPU congestion
- Suspend ContainerPod Idle or non-productive

Dynamic scaling

- Scale up VCPU for Container default/music-khd78/web-app from 34.49841 MHz to 134.49841 ... VCPU congestion in Container 'default/music-khd78/web-app'
- Scale up VMem for Container default/turbobots-mem-rc-29rk/memory-load from 200 MB to 2... VMem congestion in Container 'default/turbobots-mem-rc-29rk/memory-load'

Continuous placement

- Move ContainerPod default/router-1-ks74z from osp-node-1 to osp-node-2 VMem congestion
- Move ContainerPod default/max-api-45shg-c from osp-node-4 to osp-node-2 Improve overall performance
- Move ContainerPod default/pod-demo-3527420688-bxggf from osp-master-3 to osp-node-4 ContainerPod default/pod-demo-3527420688-bxggf doesn't comply to VMPPAccessCommodity/default/pod-demo-3527420688-b...

Optimize the management of Kubernetes cluster resources

Continuous integration

Continuous deployment



- Install
- Deploy
- Harden

Monitoring & alerts



How should you size containers from Day 1?

Dynamic placement & scaling to assure application performance on Day 2

No 복잡함, **No** 매뉴얼 작업, **No** 추측, **Just Actions**

The Customer Value when adopt Cisco IWO



Continuously optimize cloud

compute, storage, and database resources based on application demand



Eliminate idle & forgotten assets with real-time insight into your cloud environment



Make scaling and placement recommendations based on **AI Based analytic of the workload to ensure performance with minimizing costs**



Matches your Reserved Instances (RIs) to the **right instance type/SKU and guides** you to purchase the right RIs



Integrates and manages performance of all upstream versions of Kubernetes including OpenShift, Amazon EKS, Azure AKS, and Google GKE



Global firm that operates in the world's financial, energy and commodities markets.

Challenge

- **Assure performance of applications** as they migrate workloads from on-premises to cloud.
- **lack the processes to manage cloud costs** effectively

Solution

Establish cost management best practices and processes supported by Cisco Workload Optimizer

Results so far

- \$2M in amortized AWS savings (in 4 months)
- 363 AWS workloads resized for efficiency
- Over 50 unused workloads deleted



Cloud-based Healthcare Technology company

Improving infrastructure efficiency on-premises and in the cloud with Cisco Workload Optimizer

\$200K

Reductions in Microsoft Windows licensing costs

\$500K

Savings in Microsoft SQL Server licensing costs

"CWOM has provided tangible benefits in terms of infrastructure efficiency. But there have been other benefits that we didn't expect: **reducing and adjusting our workforce**, better planning, and better application performance."

- Senior Technology Manager and Lead Engineer

[ESG Technical Validation: Cisco Workload Optimization Manager](#) March 2020

The Customer Value when adopt Cisco IWO

Over 2,600 world-class companies use Cisco IWO / CWOM

Banking	Financial Services	Technology	Insurance	Healthcare	Communications	Consulting	Retail	Education	Government
BANK OF AMERICA	STATE STREET	facebook	MetLife	Allscripts	NBC UNIVERSAL	pwc	NIKE	UCLA	NASA
citi	VOYA	Caisses des Dépôts	HISCOX	Quest Diagnostics	CenturyLink	EY	wayfair	LOUISIANA COLLEGE PREPARING GRADUATES • TRANSFORMING LIVES	DEFENSE INFORMATION SCHOOL
JPMORGAN CHASE & CO.	LPL Financial	bmc	Affac	MCKESSON	BBC	ConvergeOne	carhartt	Fairfax County PUBLIC SCHOOLS ENGAGE • INSPIRE • THRIVE	NIH National Institutes of Health
ANZ	MORNINGSTAR	Hewlett Packard Enterprise	ATHENE HOLDING	Providence St. Joseph Health	GENESYS	Worley energy chemicals resources	Carrefour	LUZERNE County Community College	CITY OF Boca Raton
CREDIT SUISSE	NASDAQ OMX	Agilysys	TOKIOMARINE	PARTNERS HEALTHCARE	TELECOM	Booz Allen Hamilton	SEPHORA	NERIC	



the Next Step for App Service

March 24, 2021

Cisco Blogs / Cloud / Cisco and HashiCorp Join Forces to Deliver Infrastructure as Code Automation Across Hybrid Cloud



Cloud

Cisco and HashiCorp Join Forces to Deliver Infrastructure as Code Automation Across Hybrid Cloud

Kaustubh Das

Unified Infrastructure as Code with Cisco DCN and Compute



APIC
Controller



Cloud APIC
Controller



Multi Site
Orchestrator



Data Center
Network Manager



Intersight

the Next Step for App Service

laC : 프로그래밍 (인프라), 버전 관리 및 배포 용이, 리스크 제거, 서비스 신속성

인프라를 수동으로
구성 변경하는 경우

○○씨한테 물어봐야 알 수 있는데...

```
#inst.sh
X 발견했습니다
다 확인해 주세요.
```

○○ 절차서

1. A를 수행
2. B를 수행 X를 수행
3. C를 수행
4. Y를 수행
5. 1~34를 반복

변경 이력

2017/4/11 신규
2017/5/30 B 변경

변경 내용을 수동으로 설정.
구성 관리에 손이 가네.

인프라를 코드로
구성 변경하는 경우

달라진 데는 여기군.

```
# rm -rf /
# rm -rf /

%w{
  A
  X
  C
  Y
}.each do |name|
  package "#{name}"
do
  action :install
end
end
```

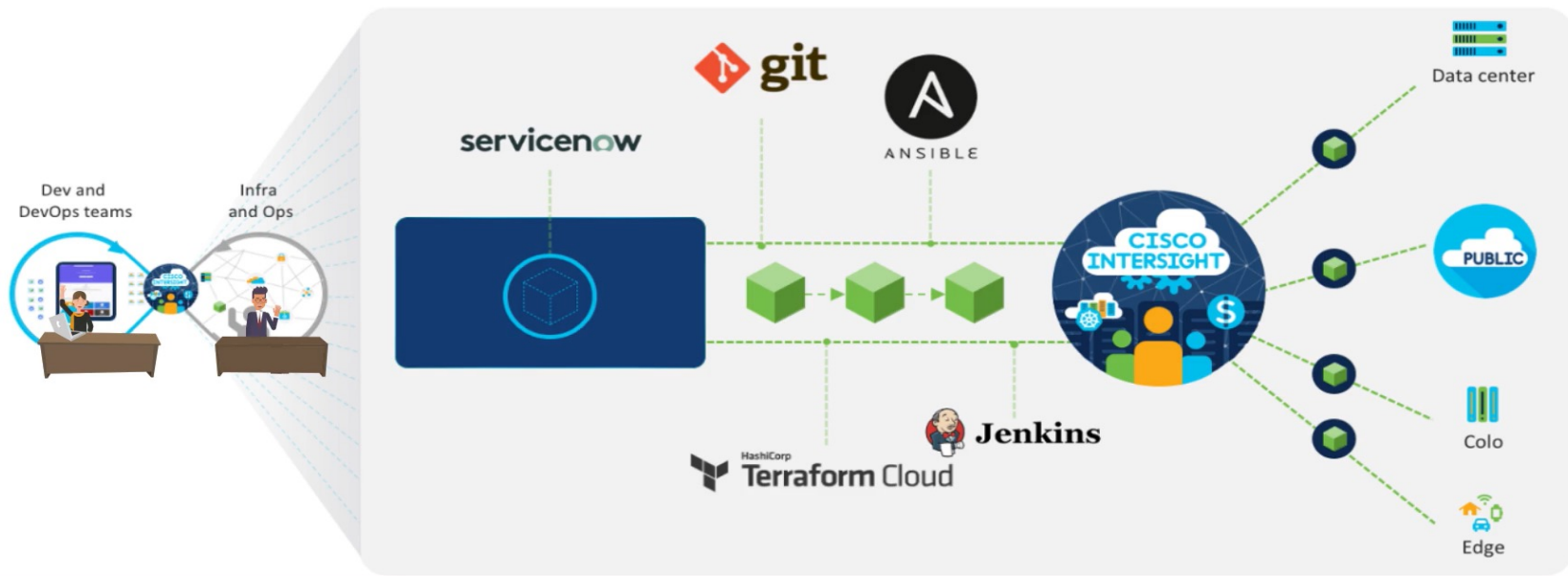
git

코드를 수정해서 재실행
하기만 할뿐.

인프라 구성 관리 기초 지식

the Next Step for App Service

Integrate with DevOps to accelerate application delivery

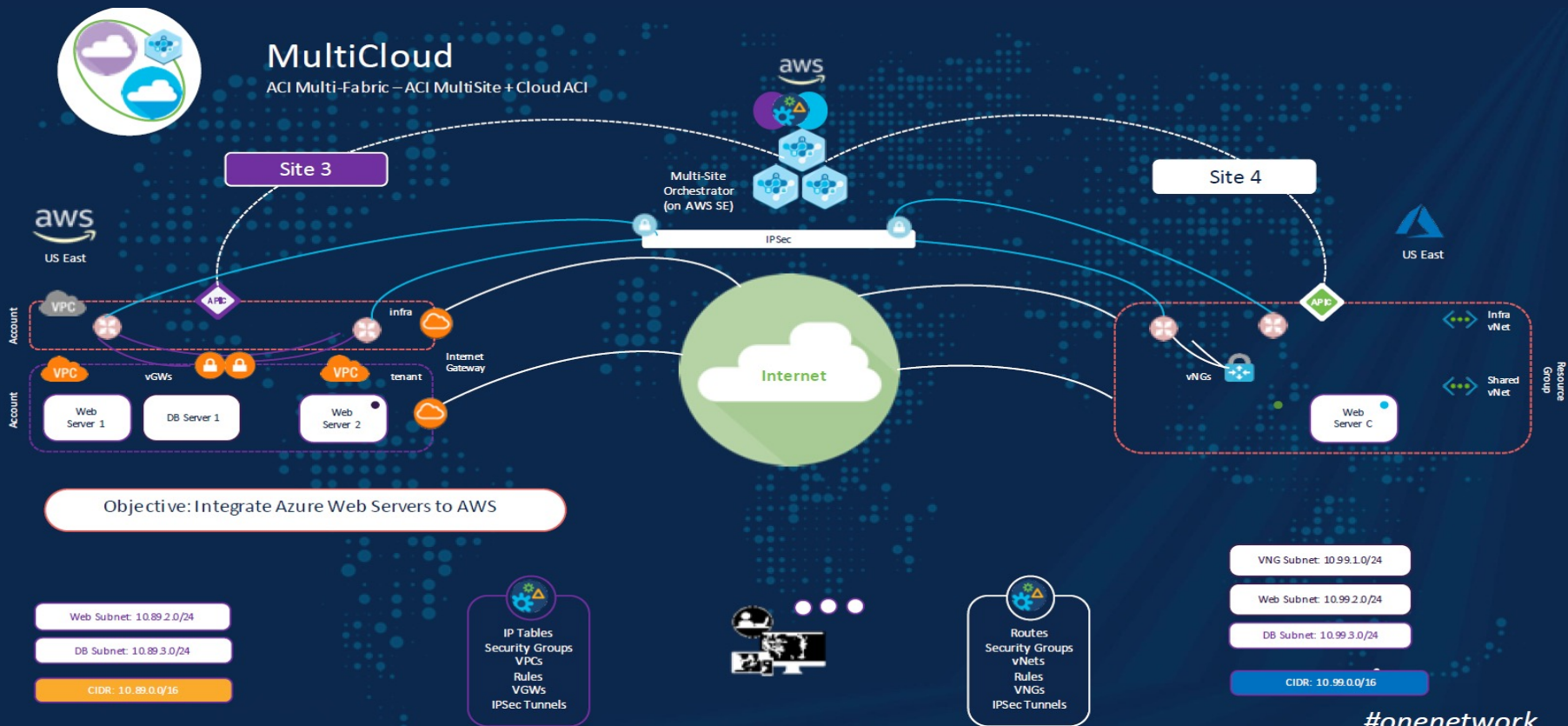


Accelerate CI/CD processes and extend infrastructure as code (IaC) workflows by integrating InterSight into your DevOps toolchains

Simplify lifecycle management with integrated infrastructure and workload orchestration tools

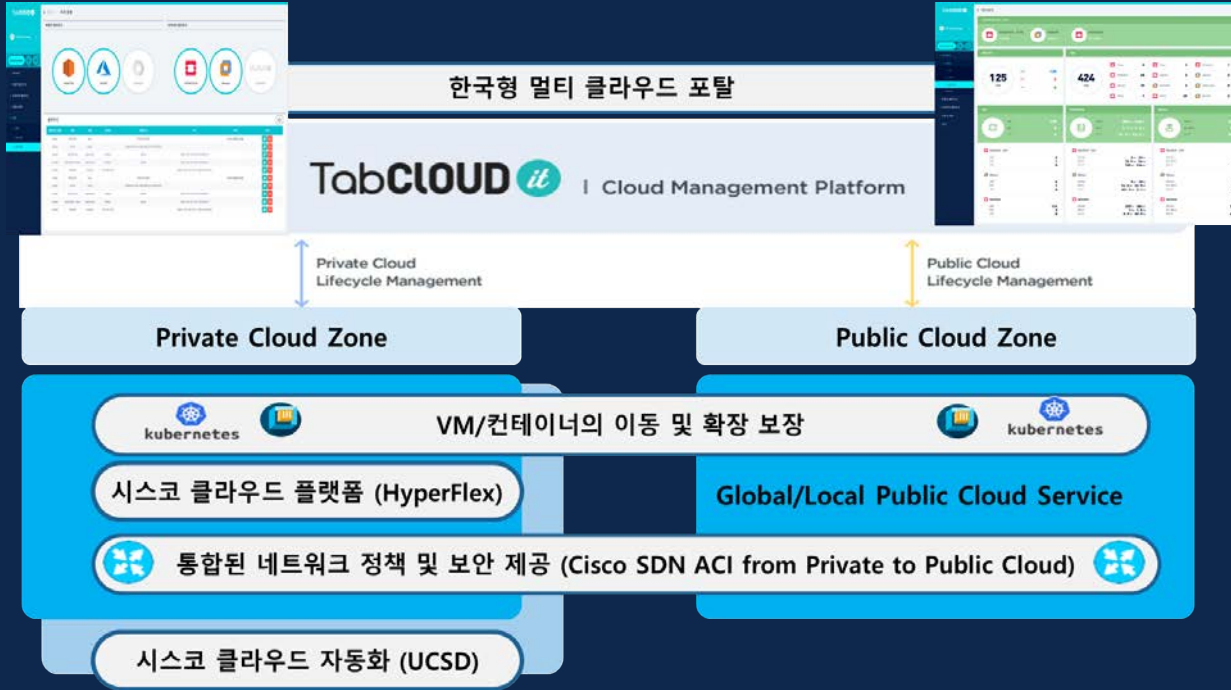
the Next Step for App Service

효율적 Cisco Cloud SDN ACI 네트워크 운영 자동화 : AWS 리전간 DR 또는 멀티 클라우드



Private / Hybrid Cloud 고려한다면 : FlexTabCloud

- Advisory
- Implementation
- Optimization
- Training
- Support
- Managed



차별화 Point

- ☑ 국산 클라우드 포탈 패키지로 신속하게 패치 및 업그레이드 등의 기술 지원 가능
- ☑ 국내 클라우드 솔루션 최초로 GS인증 및 보안 규정 요건 충족
- ☑ 기 패키지 솔루션으로 신속한 구축 및 국내 프로세스, 다양한 요구사항이 사전 반영
- ☑ 다수의 납품 레퍼런스를 통한 제품의 안정성 및 신뢰성 보장 가능



Private / Hybrid Cloud 고려한다면 : ACI Anywhere



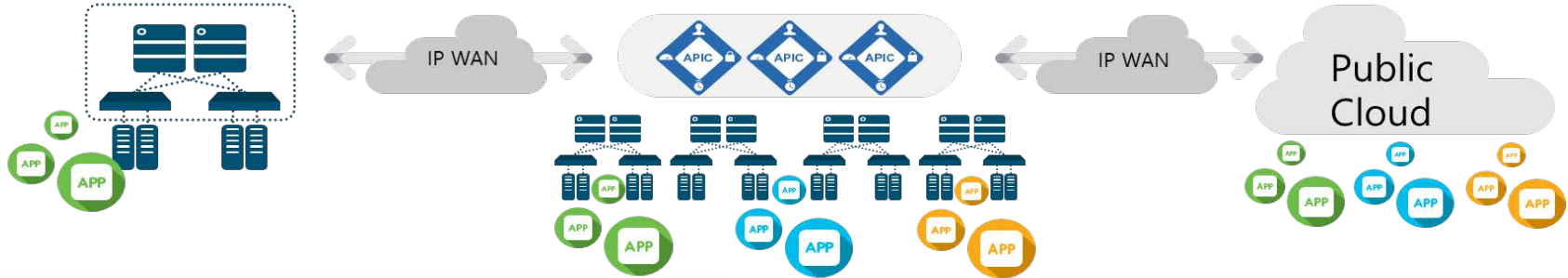
Cisco ACI Multi-Site Orchestrator

일관적 정책 배포/관리 및 분석

Remote Leaf / Virtual ACI

ACI Multi-Site for AADC

AWS/Azure Extensions



ACI : Enterprise SDN 솔루션

- 엔터프라이즈급 고성능, 고가용 네트워크 서비스 제공
- 멀티 하이퍼바이저 및 컨테이너를 지원하는 SDN 솔루션
- Active/Active Data Center, 네트워크 운영 자동화



AIOP 분석 툴 기반 서비스 가시성 및 인프라 보안 강화

- AIOP 관리 기능 제공 : Human Error, 트래픽 트렌드 및 하드웨어 상태 분석으로 사전 장애 예방

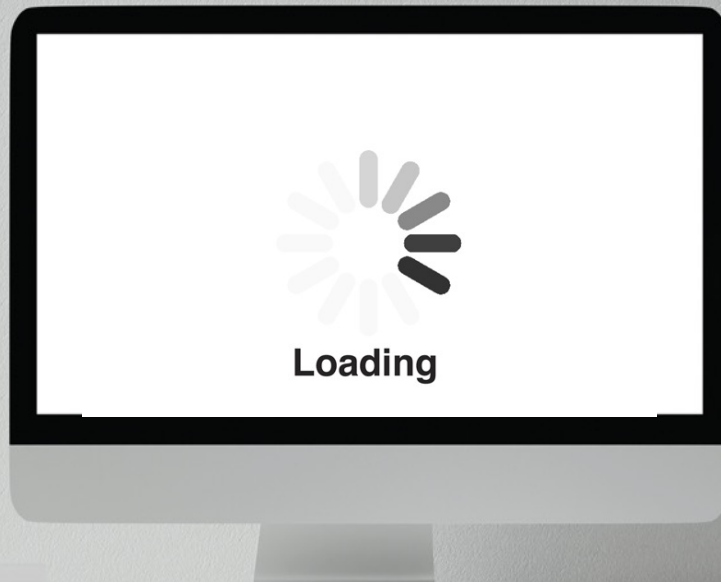
Private / Hybrid Cloud 고려한다면 : ACI Anywhere



Summary of Session

Poor Application performance hurts your business.

- ↓ Revenue opportunity
- ↓ IT productivity
- ↓ Developer innovation
- ↓ End-user confidence in you
- ↓ Customer loyalty



Assuring performance in the modern application era.



Intersight Workload Optimizer (IWO)

