

Multi-Cloud

2021년 7월까지 사용을 권장 합니다.

2021년 5월
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내용

- I. 개요
- II. Market
- III. Multi-Cloud Network
- IV. 전략
- V. 인증
- VI. 로그 관리

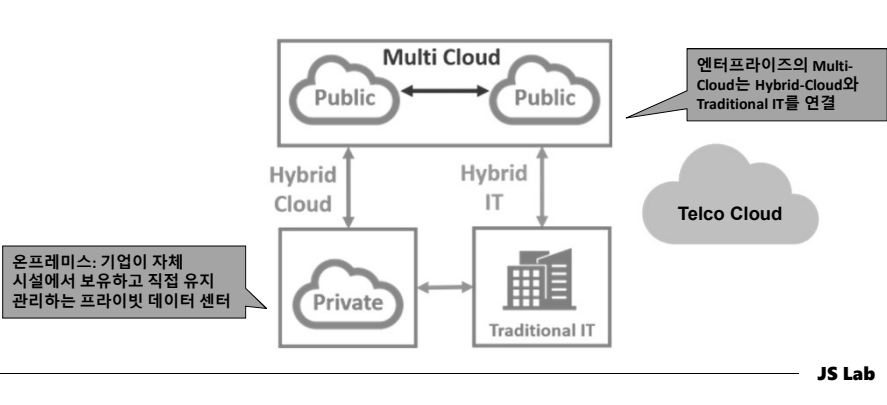
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I. 개요

❖ 엔터프라이즈의 Multi-Cloud는 Hybrid-Cloud와 Traditional IT 연동

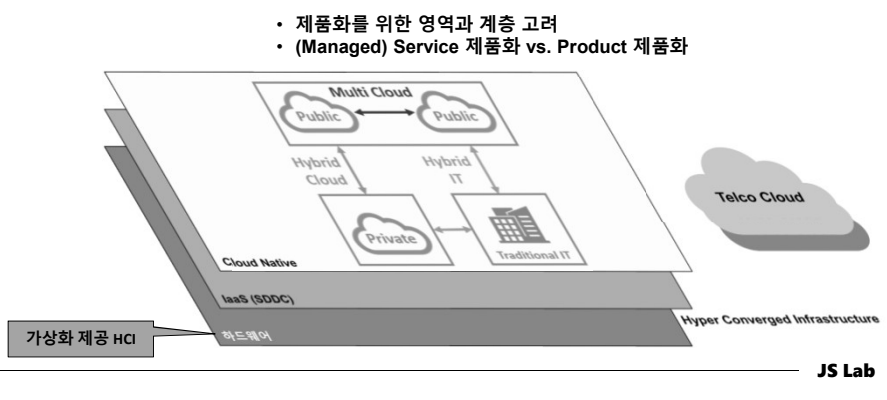
- Multi-Cloud: Public 클라우드간 연결
- Hybrid-Cloud: Public 클라우드와 Private 클라우드의 연결
- Hybrid IT: 온프레미스(On-premise)와 Public 클라우드의 연결
- Telco Cloud: 멀티 클라우드 기술 기반 통신사 인프라



I. 개요

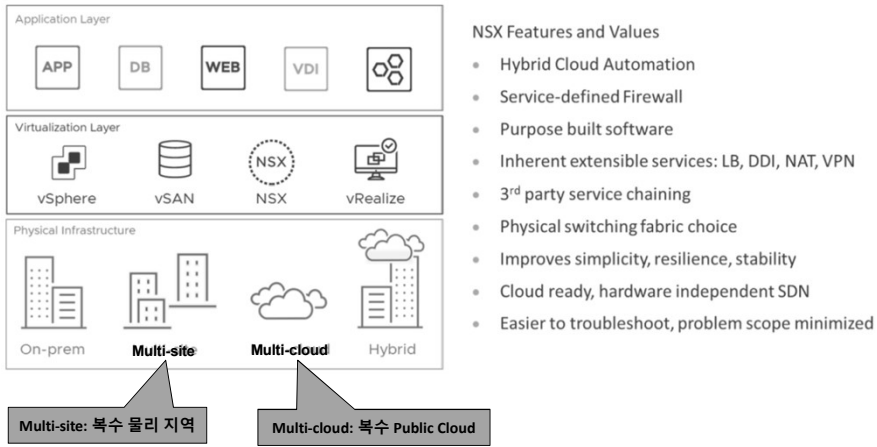
❖ 계층화 인프라

- 인프라의 계층별 추상화 (서비스에 집중)
- 계층간 격리와 정책 기반 서비스 노출
- 성능 개선 (계층 Offload 필요)
- 계층간 연결 호환성



I. 개요

- ❖ VMware의 Multi-cloud
- ❖ NSX over Any Fabric Underlay, Site, Cloud



- NSX Features and Values
- Hybrid Cloud Automation
 - Service-defined Firewall
 - Purpose built software
 - Inherent extensible services: LB, DDI, NAT, VPN
 - 3rd party service chaining
 - Physical switching fabric choice
 - Improves simplicity, resilience, stability
 - Cloud ready, hardware independent SDN
 - Easier to troubleshoot, problem scope minimized

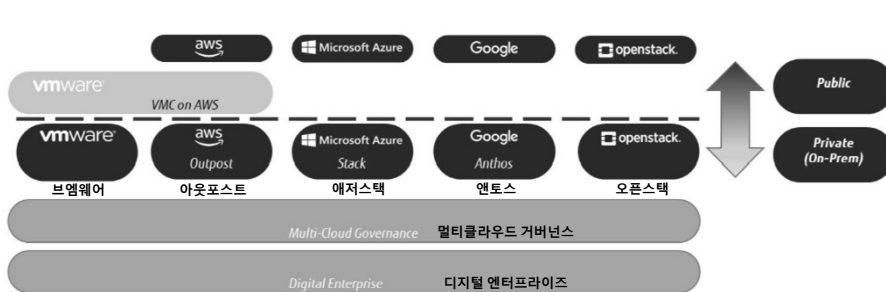
출처: DEPLOYING VMWARE NSX WITH CISCO ACI UNDERLAY DESIGN GUIDE (VERSION: 2021)

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II. Market

- ❖ 주요 플레이어 (Main players in the field)

- **Public:** AWS, Azure, Google, OpenStack, (VMware)
- **Private(On-Prem):** VMware, Outpost(AWS), Azure Stack, Anthos(Google), OpenStack

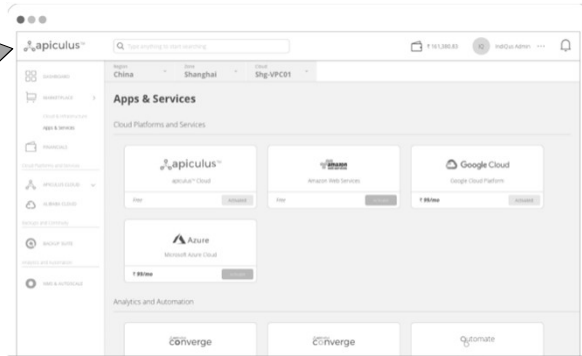
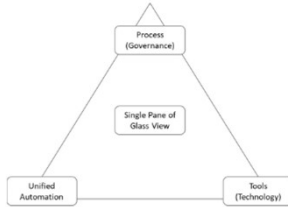


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II. Market

❖ 멀티클라우드를 위한 Single pane of glass: 시장 요구

apiculus® Cloudstack Multi-Cloud Management Platform turns Cloudstack-powered clouds into a complete multi-cloud monetisation platform and enables users to manage AWS, Azure and Google Cloud workloads by bringing in billing, technical and support operations into a single pane of glass.



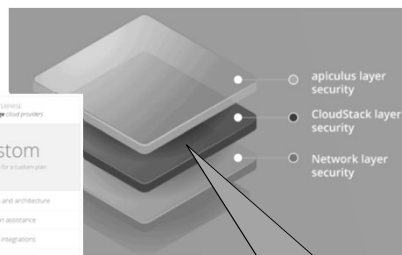
출처: <https://www.apiculus.io/multicloud/>

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II. Market

❖ CloudStack + apiculus – a combination for effectively securing your public cloud

Essentials Start at \$599	Advanced Start at \$999	Reference Start at large cloud providers
\$599 <small>one month, plus 24 of monthly billing</small>	\$999 <small>one month, plus 24 of monthly billing</small>	Custom <small>Contact sales for a custom plan</small>
Subscription billing and invoicing In-built tooling and monitoring Catalogues, discounts and vouchers White label CMP White label SaaS marketplace Email, SMS, 2FA and payment gateway Basic support plan	Everything in Essentials plus: Dashboards and reports Retailer module PaaS, SaaS and IaaS marketplace Cloud brokerage Marketing stack integration Standard support plan	Cloud design and architecture Migration assistance Custom integrations Custom modules Dedicated account manager Dedicated success manager Premium support plan
Requires a 15-day trial	Requires 1 demo	Contact Sales



Apache CloudStack is generally considered secure out of the box.

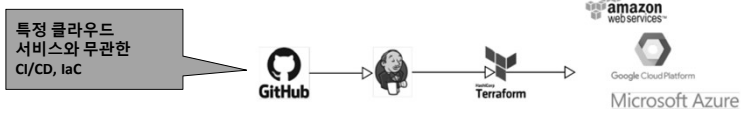
출처: <https://www.apiculus.io/cloud-management-platform/cloudstack-apiculus-a-combination-for-effectively-securing-your-public-cloud/>

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II. Market

- ❖ Cloud-Agnostic
- ❖ Building Applications – Infrastructure as Code
- ❖ 클라우드 서비스 사업자 솔루션 대체 오픈소스 시장 (예)

	Cloud-Native	Cloud-Agnostic
Source Code Repositories	AWS CodeCommit Azure DevOps Repos Google Cloud Source Repositories	GitHub GitLab Bitbucket
CI/CD Pipelines	AWS CodePipeline Azure DevOps Pipelines Google Cloud Build	Jenkins GitHub Actions CircleCI
IaC Templates	AWS CloudFormation Azure Resource Manager (ARM) Templates Google Cloud Deployment Manager	Terraform Pulumi serverless framework

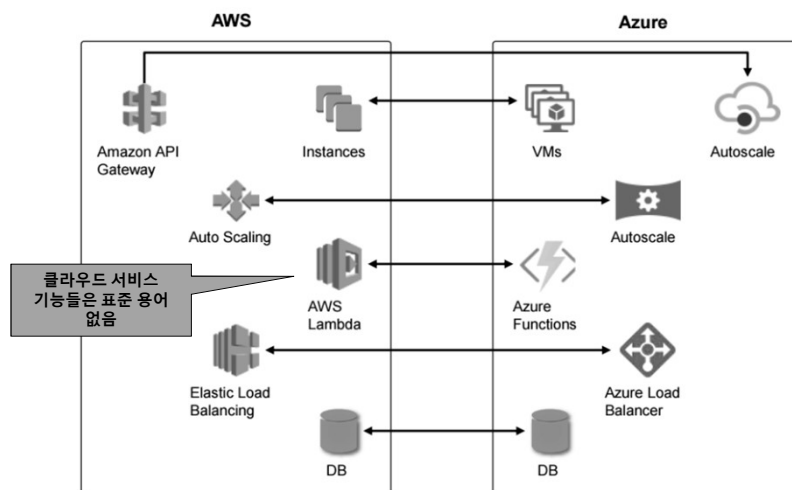


Cloud-agnostic platforms are environments that are capable of operating with any public cloud provider with minimal disruptions to a business.

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II. Market

- ❖ 동일 서비스 고려하는 Multi-Cloud Architecture



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II. Market

❖ Transitioning to a Multi-Cloud Environment – Challenges

- **Networking:** 네트워크 계층의 전환 - 물리적 위치와 역동적으로 변화하는 서비스와 애플리케이션의 IP 주소 (Dynamic registry of services for discovery, segmentation, and composition)

Network Services / Function	AWS	Azure	Google
Network Administration	Account	Subscription	Project
Virtual Network	VPC & Subnets	VNET & Subnet	VPC and Sub-Network
DNS	Route 53	Traffic Manager	Cloud DNS
VPN	VGW	VPN Gateway	VPN Gateway
Peering	AWS Peering or DirectConnect	Azure Peering or ExpressRoute	Google Cloud Interconnect
Load Balancer	ELB	NLB	Cloud Load Balancer
Security	Sec Groups	Network Security Groups	Network ACLs
Storage	S3	Blob Storage	Cloud Storage
Notifications	SNS	Notification hubs	Cloud Messaging
Messaging	SQS	Batch	Pub/Sub
Logging	CloudTrail	Operational Insights	Cloud Logging
Monitoring	CloudWatch	Application Insights	Cloud Monitoring

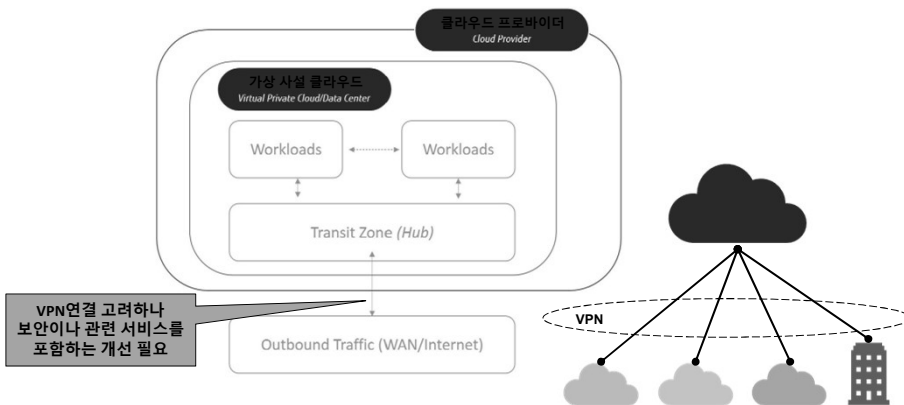
출처: <https://aviatrix.com/learn-center/answered-multi-cloud/how-to-do-multicloud-networking-abstraction-and-orchestration-across-aws-azure-and-google/>

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III. Multi-Cloud Network

❖ 국내 엔터프라이즈 인프라 사업에 클라우드 포함

❖ High-level diagram of a virtual private cloud/data center

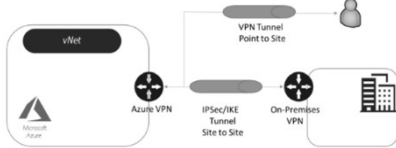


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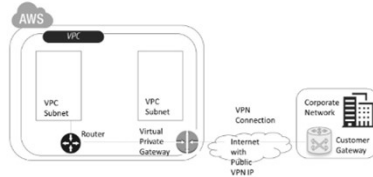
III. Multi-Cloud Network

❖ connectivity concepts in multi-cloud (VPN)

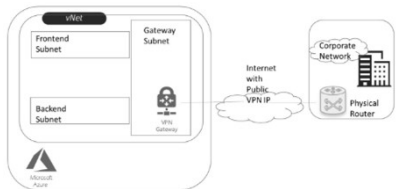
Point-to-site and site-to-site VPN setup in Azure



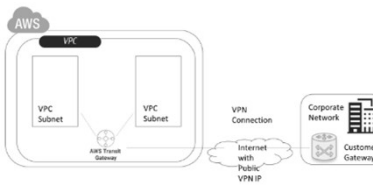
Design of a single site-to-site in AWS



Design of the VPN gateway in Azure



Design of a single site-to-site with AWS Transit Gateway



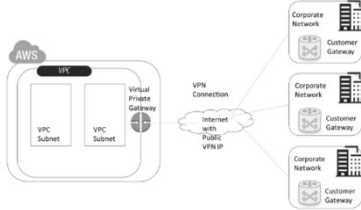
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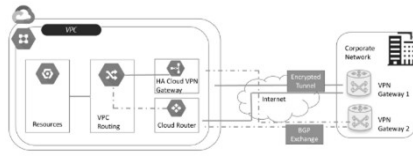
III. Multi-Cloud Network

❖ connectivity concepts in multi-cloud (VPN)

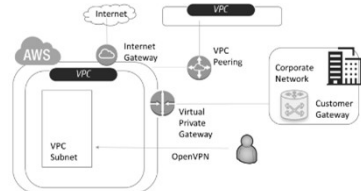
design of AWS CloudHub



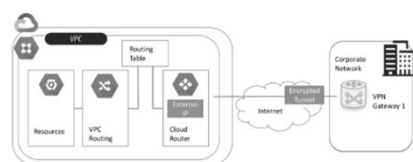
design of HA VPN in Google Cloud



design of AWS Client VPN



design of the Classic VPN gateway in Google Cloud



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III. Multi-Cloud Network

- ❖ Technology strategy following business innovation
- ❖ Ordering the VPN Gateway functionality in the Azure cost model

VPN Gateway

REGION: West Europe TYPE: VPN Gateways

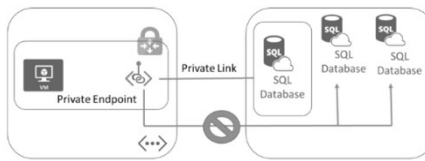
TIER: Basic VPN

730 Gateway Hours = \$26.28

Site to Site (S2S) Tunnels
Up to 10 tunnels are included for free.

Point to Site (P2S) Tunnels
Up to 128 tunnels are included for free.

Private Link uses a private endpoint so that gateways with NAT translating from public to private addresses—are no longer required:



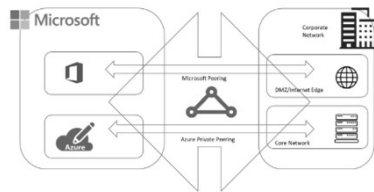
VPN은 보안이나 관련 서비스를 포함하는 개선 요구 있음

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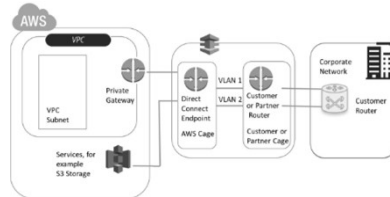
III. Multi-Cloud Network

- ❖ connectivity concepts in multi-cloud (전용선 서비스 연계)

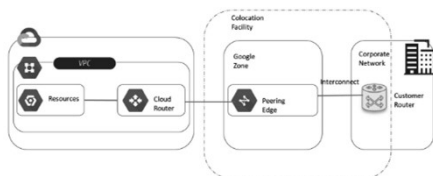
Microsoft's ExpressRoute concept



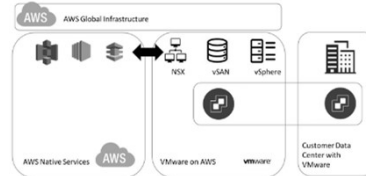
AWS' Direct Connect concept



Google's concept for Dedicated Interconnect



Concept for VMware on AWS



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III. Multi-Cloud Network

❖ Unlimited Data plan(Azure ExpressRoute 예)

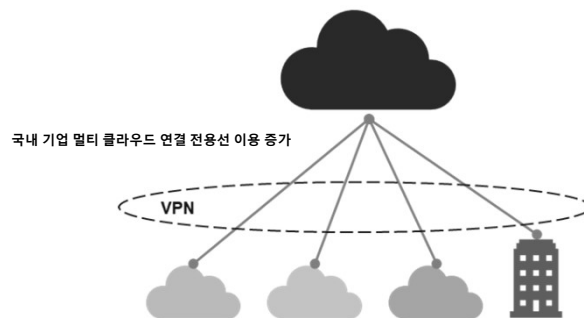
안정적인 대역폭을
제공하나 고가임

Circuit bandwidth	Local Circuit Price per Month	Standard circuit price per month	Premium circuit price per month	Inbound data transfer included	Outbound data transfer included
50 Mbps	N/A	\$300	\$375	Unlimited	Unlimited
100 Mbps	N/A	\$575	\$675	Unlimited	Unlimited
200 Mbps	N/A	\$1,150	\$1,300	Unlimited	Unlimited
500 Mbps	N/A	\$2,750	\$3,150	Unlimited	Unlimited
1 Gbps	\$1,200	\$5,700	\$6,450	Unlimited	Unlimited
2 Gbps	\$2,200	\$11,400	\$12,900	Unlimited	Unlimited
5 Gbps	\$3,600	\$25,650	\$28,650	Unlimited	Unlimited
10 Gbps	\$5,500	\$51,300	\$54,300	Unlimited	Unlimited

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III. Multi-Cloud Network

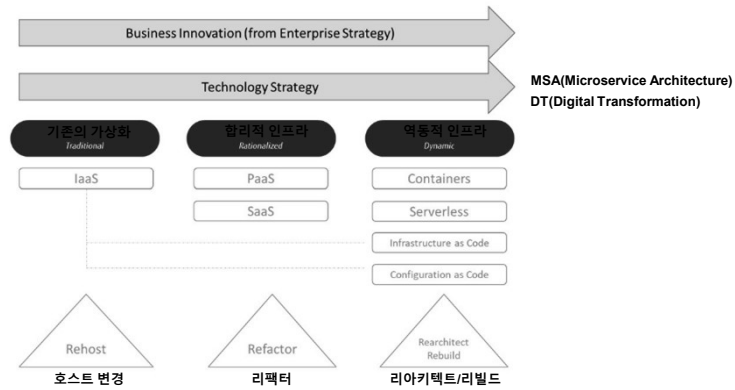
- ❖ 2021년 엔터프라이즈 인프라 사업 전략 트렌드 (MSA → DT)
- ❖ 국내 MSA 사업을 위한 엔터프라이즈 환경



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IV. 전략

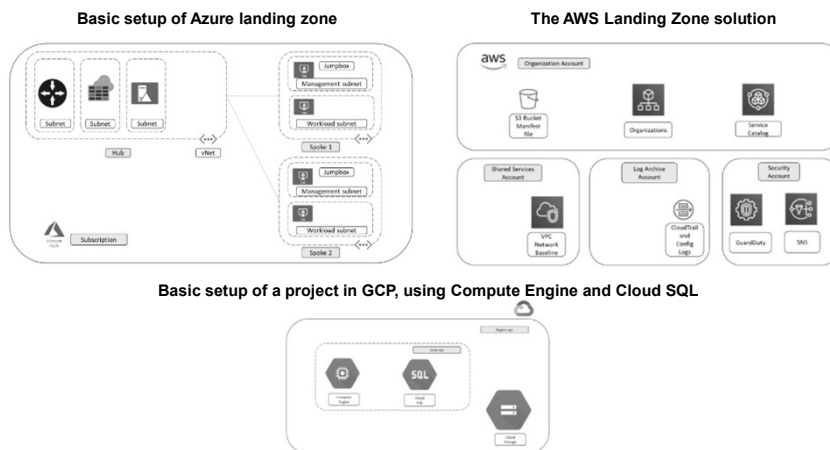
- ❖ Technology strategy following business innovation
- ❖ 국내 2020년 엔터프라이즈 사업에 시험적 Refactor 포함



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IV. 전략

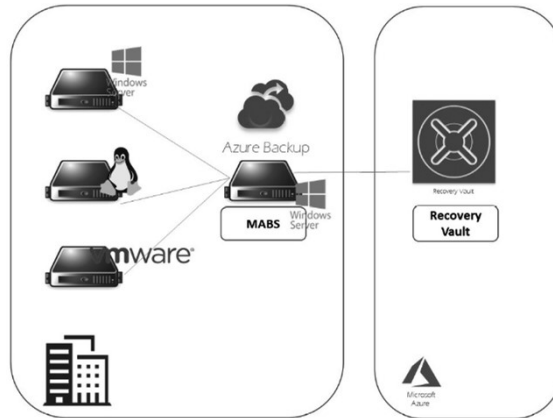
- ❖ Creating a multi-cloud landing zone and blueprint
- ❖ landing zone: 구현을 위한 클라우드 서비스 세트



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IV. 전략

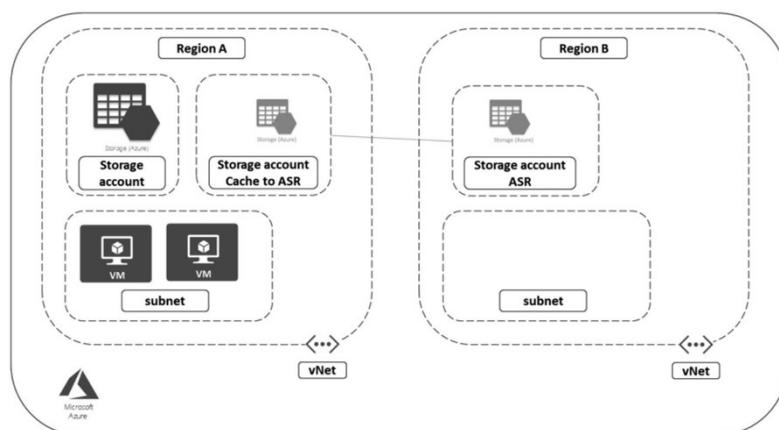
❖ High-level overview of the setup for Microsoft Azure Backup Server



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IV. 전략

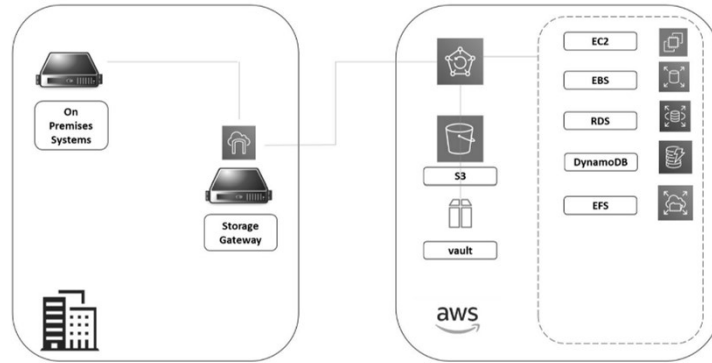
❖ High-level overview of Azure Site Recovery (ASR)



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IV. 전략

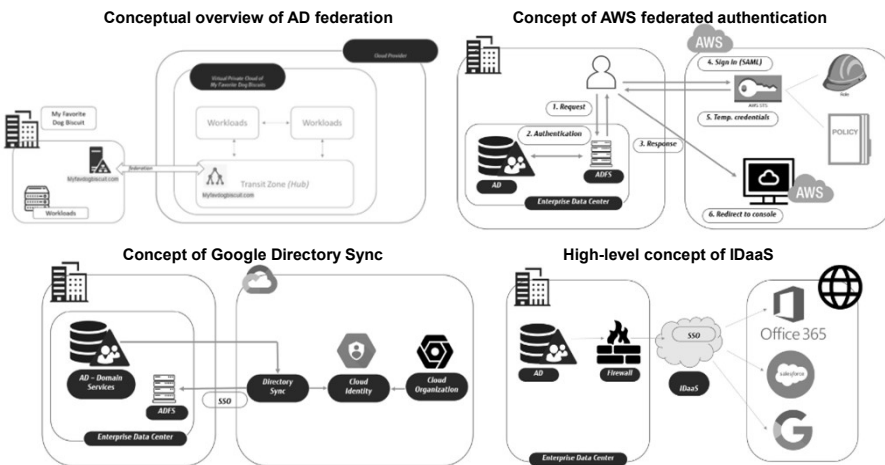
- ❖ 클라우드 백업
- ❖ 클라우드 백업 (예): Hybrid backup in AWS



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V. 인증

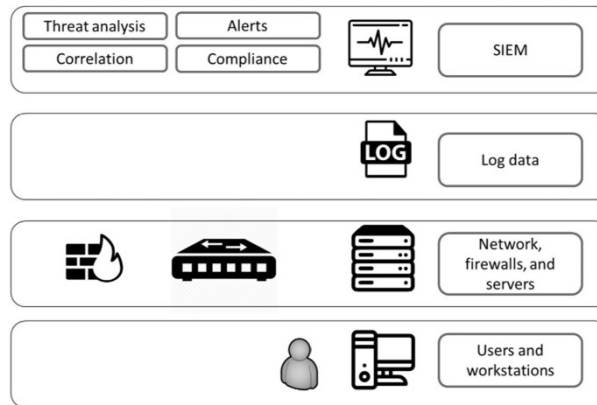
- ❖ Designing access management across multi-cloud
- ❖ 기업내 사용 인증 클라우드 확장 적용 필요



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VI. 로그 관리

❖ The conceptualized architecture of a SIEM system



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감사합니다.

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