

Cloud Computing

Intro

Les 6 20181025

M.DIMA



Cloud Computing Is...

*On demand computing resources, delivered to you over
the Internet*

A computing service you traditionally did local (on-premises), now performed remotely, across the Internet (off-premises)



According to VMware...

Cloud computing is an approach to computing that leverages the efficient pooling of an on-demand, self-managed, virtual infrastructure.”



Traits of a Cloud

Elastic

Scales up or down quickly

Metered

Pay only for what you use

Self-Service

No (or reduced) need for IT Experts



Benefits of Cloud Computing

Fast access to resources or applications you or your company needs

Only pay for what you use

No capital expenditure to get started

Potential to eliminate the need for local IT staff to maintain infrastructure and applications

Potential to lower costs

Deploy what you need, yourself, with self-service

Allow IT staff to instead focus on the business



Risks of Cloud Computing

- Placing your trust in the cloud provider**
- Potential for data loss**
- Potential for slow access to your data**
- Potential questions related to legal/regulatory**
- Potential for loss of customization**
- Potential for unknown costs**



Cloud Computing Comes in Many Forms...



Software as a Service



Infrastructure as a Service



Platform as a Service



(everything) as a Service (?aaS)



What Has Cloud Been Called in the Past?

Centralized computing

Grid computing

Distributed computing

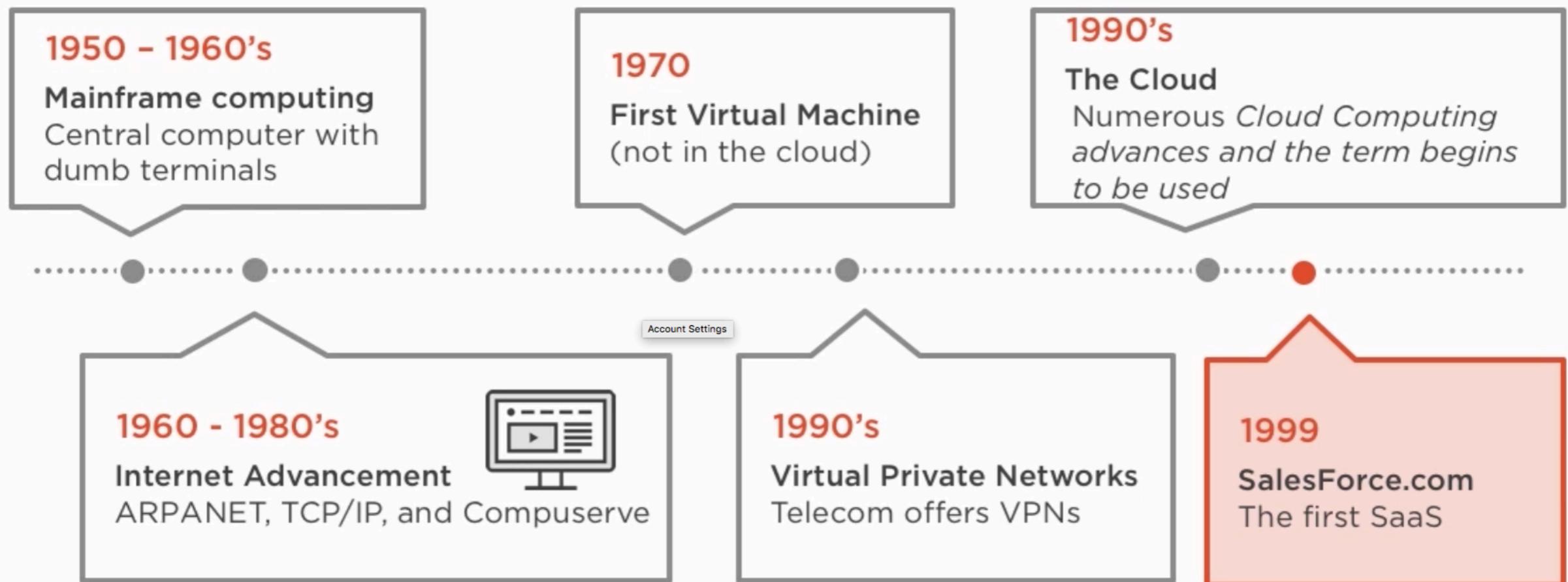
On-demand computing

Hosting

Application service provider (ASP)



History of Cloud Computing



History of Cloud Computing

2006

Amazon.com

Amazon launched their EC2 IaaS as a beta

2008

Microsoft Azure

Azure IaaS were announced

2016

AWS EC2 Revenue

As of 2016, Revenue now \$12.22 Billion

2006

Google Docs

Google Docs was launched



2013

Google Compute Engine

GCE IaaS released to GA

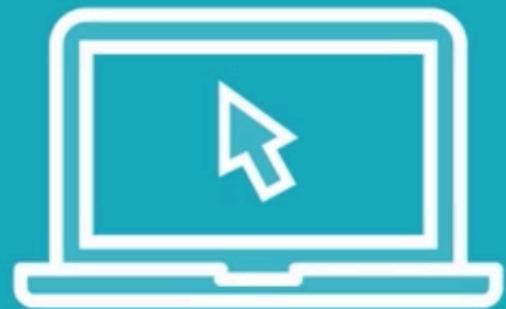
2017

SalesForce Revenue

As of 2016, Revenue now estimated to be over \$8 Billion

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Demo



Cloud Computing in Action....





Office 365

Admin center



David Davis



Home

Search users, groups, settings or tasks

Go to the old admin center

Users >

- + Add a user
- Delete a user
- >Edit a user
- Reset a password

Billing >

- Total balance: \$0.00
- Update payment details
- View my bill

Office software

- Install my software
- Share the download link
- Software download settings
- Troubleshoot installation

Domains >

- + Add a domain
- Delete a domain
- Edit a domain
- Check health

Message center >

- New feature: Office 365 Groups retention polici... Apr 6 X
 - Updated feature: Planner task assignments Apr 3 X
 - Updated feature: Manage Permissions in OneDr... Mar 31 X
- 31 unread messages

Service health > **Active users** >

Need help?

Feedback





Services ▾

Resource Groups ▾



David M. Davis ▾

N. Virginia ▾

Support ▾

History

Console Home

Search services

Group A-Z

Compute

- EC2
- EC2 Container Service
- Lightsail
- Elastic Beanstalk
- Lambda
- Batch

Storage

- S3
- EFS
- Glacier
- Storage Gateway

Database

- RDS
- DynamoDB
- ElastiCache

Redshift

Networking & Content Deliv...

- VPC

Developer Tools

- CodeCommit
- CodeBuild
- CodeDeploy
- CodePipeline
- X-Ray

Management Tools

- CloudWatch
- CloudFormation
- CloudTrail
- Config
- OpsWorks
- Service Catalog
- Trusted Advisor
- Managed Services

Security, Identity & Complia...

- IAM
- Inspector
- Certificate Manager
- Directory Service
- WAF & Shield
- Compliance Reports

Analytics

- Athena
- EMR
- CloudSearch
- Elasticsearch Service
- Kinesis
- Data Pipeline
- QuickSight

Artificial Intelligence

- Lex
- Polly
- Rekognition
- Machine Learning

Internet Of Things

- AWS IoT

Contact Center

- Amazon Connect

Game Development

Application Services

- Step Functions
- SWF
- API Gateway
- Elastic Transcoder

Messaging

- Simple Queue Service
- Simple Notification Service
- SES

Business Productivity

- WorkDocs
- WorkMail
- Amazon Chime

Desktop & App Streaming

- WorkSpaces
- AppStream 2.0



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<https://console.aws.amazon.com/redshift/home?region=us-east-1>



Services ▾

Resource Groups ▾



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Support ▾

EC2 Dashboard

Events

Tags

Reports

Limits

INSTANCES

Instances

Spot Requests

Reserved Instances

Scheduled Instances

Dedicated Hosts

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

LOAD BALANCING

Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) region:

0 Running Instances

0 Dedicated Hosts

0 Volumes

1 Key Pairs

0 Placement Groups

0 Elastic IPs

0 Snapshots

0 Load Balancers

3 Security Groups

Just need a simple virtual private server? Get everything you need to jumpstart your project - compute, storage, and networking – for a low, predictable price. [Try Amazon Lightsail for free.](#) 

Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance

Note: Your instances will launch in the US East (N. Virginia) region

Service Health

Service Status:

 US East (N. Virginia):
This service is operating normally

Availability Zone Status:

 us-east-1a

Scheduled Events

US East (N. Virginia):

No events

AWS Marketplace

Find free software trial products in the AWS Marketplace from the [EC2 Launch Wizard](#). Or try these popular AMIs:

Barracuda NextGen Firewall F-Series - PAYG

Provided by Barracuda Networks, Inc.

Rating 

Starting from \$0.00/hr or from \$1,500/yr





1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

[Cancel and Exit](#)

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Quick Start

< < 1 to 31 of 31 AMIs > >

My AMIs

**Amazon Linux AMI 2017.03.0 (HVM), SSD Volume Type - ami-22ce4934**[Select](#)

AWS Marketplace

Amazon Linux

Free tier eligible

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.

64-bit

Community AMIs

Root device type: ebs Virtualization type: hvm

 Free tier only (i)**Red Hat Enterprise Linux 7.3 (HVM), SSD Volume Type - ami-b63769a1**[Select](#)

Red Hat

Free tier eligible

Red Hat Enterprise Linux version 7.3 (HVM), EBS General Purpose (SSD) Volume Type

64-bit

Root device type: ebs Virtualization type: hvm

**SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type - ami-fde4ebea**[Select](#)

SUSE Linux

Free tier eligible

SUSE Linux Enterprise Server 12 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.

64-bit

Root device type: ebs Virtualization type: hvm

**Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-f4cc1de2**[Select](#)

Ubuntu Server 16.04 LTS (HVM).EBS General Purpose (SSD) Volume Type. Support available from Canonical



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1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
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7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types

Current generation

Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes

Cancel

Previous

Review and Launch

Next: Configure Instance Details



Feedback

English

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1. Choose AMI
2. Choose Instance Type
3. Configure Instance
4. Add Storage
5. Add Tags
6. Configure Security Group
7. Review

Step 7: Review Instance Launch

Root Device Type: ebs Virtualization Type: HVM

Instance Type

Instance Type	ECUs
t2.micro	Variable

Security Groups

Security group name	Launch configuration
	launch
Description	launch

Instance Details

Storage

Tags

Select an existing key pair or create a new key pair



Edit instance type

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Edit security groups

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

- Choose an existing key pair
- Create a new key pair
- Proceed without a key pair

I acknowledge that I have access to the selected private key file (david.pem), and that without this file, I won't be able to log into my instance.

Cancel

Launch Instances

Edit instance details

Edit storage

Edit tags

Cancel

Previous

Launch

Feedback

English

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Placement Groups

Key Pairs

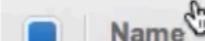
Launch Instance

Connect

Actions ▾

search : i-08471502cb9ca884b Add filter

1 to 1 of 1 > >



Name



Instance ID

Instance Type

Availability Zone

Instance State

Status Checks

Alarm Status

Public DNS (IPv4)



i-08471502cb9ca884b

t2.micro

us-east-1c

running

2/2 checks ...

None

ec2-52-3-230-251.c

Instance: i-08471502cb9ca884b

Public DNS: ec2-52-3-230-251.compute-1.amazonaws.com

Description

Status Checks

Monitoring

Tags

Instance ID i-08471502cb9ca884b

Public DNS (IPv4) ec2-52-3-230-251.compute-1.amazonaws.com

Instance state running

IPv4 Public IP 52.3.230.251

Feedback

English

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daviddavissecuritykey....pem ▾

Show All

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VIVES HBO V



EC2 Dashboard

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- INSTANCES

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Show All

Connect To Your Instance X

- I would like to connect with A standalone SSH client
 A Java SSH Client directly from my browser (Java required)

To access your instance:

1. Open an SSH client. (find out how to [connect using PuTTY](#))
2. Locate your private key file (david davis security key pair.pem). The wizard automatically detects the key you used to launch the instance.
3. Your key must not be publicly viewable for SSH to work. Use [this command](#) if needed:

```
chmod 400 david davis security key pair.pem
```

4. Connect to your instance using its Public DNS:

```
ec2-52-3-230-251.compute-1.amazonaws.com
```

Example:

```
ssh -i "david davis security key pair.pem" ec2-user@ec2-52-3-230-251.compute-1.amazonaws.com
```

Please note that in most cases the username above will be correct, however please ensure that you read your AMI usage instructions to ensure that the AMI owner has not changed the default AMI username.

If you need any assistance connecting to your instance, please see our [connection documentation](#).

Close

David-iMac-5K:~ david\$ ssh -i "daviddavissecuritykeypair.pem" ec2-user@ec2-52-3-230-251.compute-1.amazonaws.com

Last login: Fri Apr 7 17:25:57 2017 from 216.16.219.247.dyn-cm-pool47.pool.hargray.net

__| __|_)
_ | (_ / Amazon Linux AMI
__| __|__|

<https://aws.amazon.com/amazon-linux-ami/2017.03-release-notes/>

2 package(s) needed for security, out of 2 available

Run "sudo yum update" to apply all updates.

[ec2-user@ip-172-31-66-55 ~]\$

[ec2-user@ip-172-31-66-55 ~]\$

[ec2-user@ip-172-31-66-55 ~]\$

[ec2-user@ip-172-31-66-55 ~]\$



```
root      2386  1  0 17:22 ?          00:00:00 /usr/sbin/acpid
root      2526  1  0 17:22 ?          00:00:00 /usr/sbin/sshd
ntp       2536  1  0 17:22 ?          00:00:00 ntpd -u ntp:ntp -p /var/run/ntpd.pid -g
root      2556  1  0 17:22 ?          00:00:00 sendmail: accepting connections
smmsp    2565  1  0 17:22 ?          00:00:00 sendmail: Queue runner@01:00:00 for /var/
root      2577  1  0 17:22 ?          00:00:00 crond
root      2591  1  0 17:22 ?          00:00:00 /usr/sbin/atd
root      2626  1  0 17:22 ttys0     00:00:00 /sbin/agetty ttys0 9600 vt100-nav
root      2628  1  0 17:22 tty1      00:00:00 /sbin/mingetty /dev/tty1
root      2631  1  0 17:22 tty2      00:00:00 /sbin/mingetty /dev/tty2
root      2633  1  0 17:22 tty3      00:00:00 /sbin/mingetty /dev/tty3
root      2635  1  0 17:22 tty4      00:00:00 /sbin/mingetty /dev/tty4
root      2637  1  0 17:22 tty5      00:00:00 /sbin/mingetty /dev/tty5
root      2639  1530 0 17:22 ?        00:00:00 /sbin/udevd -d
root      2640      1  0 17:22 ttys0   00:00:00 /sbin/mingetty /dev/ttys0
root      2681  2526 0 17:28 ?        00:00:00 sshd: ec2-user [priv]
ec2-user  2683  2681 0 17:28 ?        00:00:00 sshd: ec2-user@pts/0
ec2-user  2684  2683 0 17:28 pts/0    00:00:00 -bash
ec2-user  2706  2684 0 17:29 pts/0    00:00:00 ps -ef
[ec2-user@ip-172-31-66-55 ~]$
```



Summary



What is it?

Traits of a Cloud

Benefits of Cloud Computing

Risks of Cloud Computing

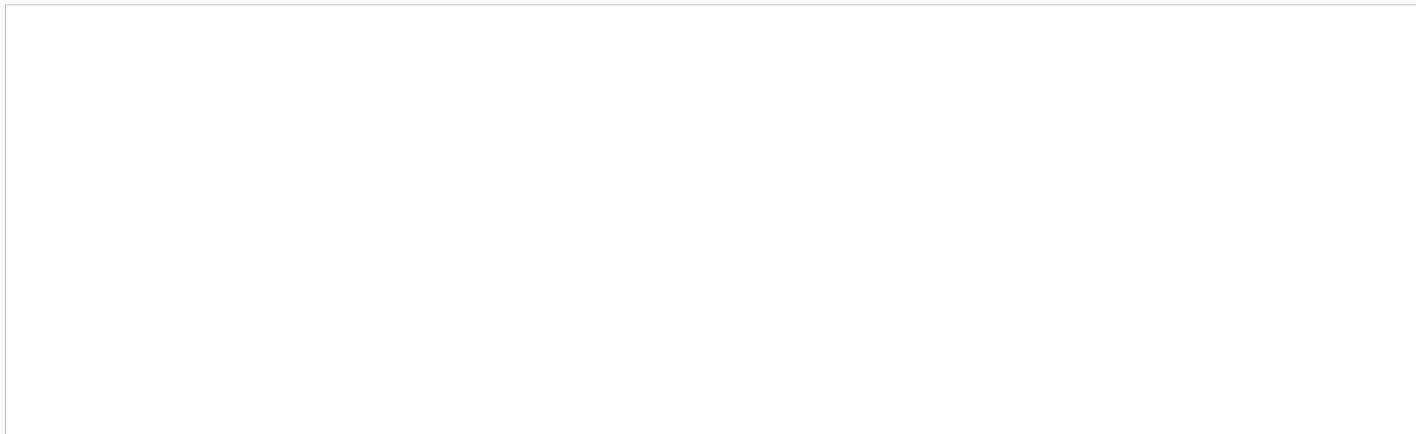
Many Forms of Cloud Computing

History of Cloud Computing

Demo - Cloud Computing in Action



Infrastructure as a Service (IaaS)



Overview



What is Virtualization?

What is a Virtual Machine?

What is a Container?

Private Cloud, Hybrid Cloud, and Public Cloud

Virtualization vs Private Cloud

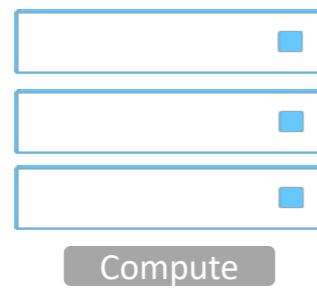
IaaS Pricing Models

Service Level Agreements (SLA)

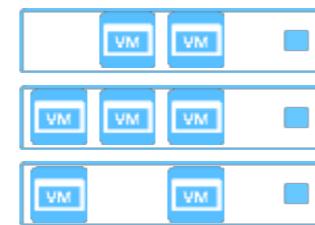
Migrating to the Cloud



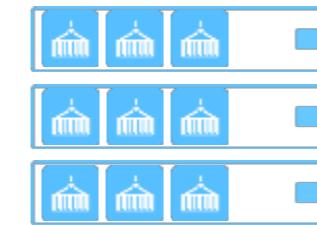
VIRTUALIZATION TECHNOLOGY



Compute



Virtualized

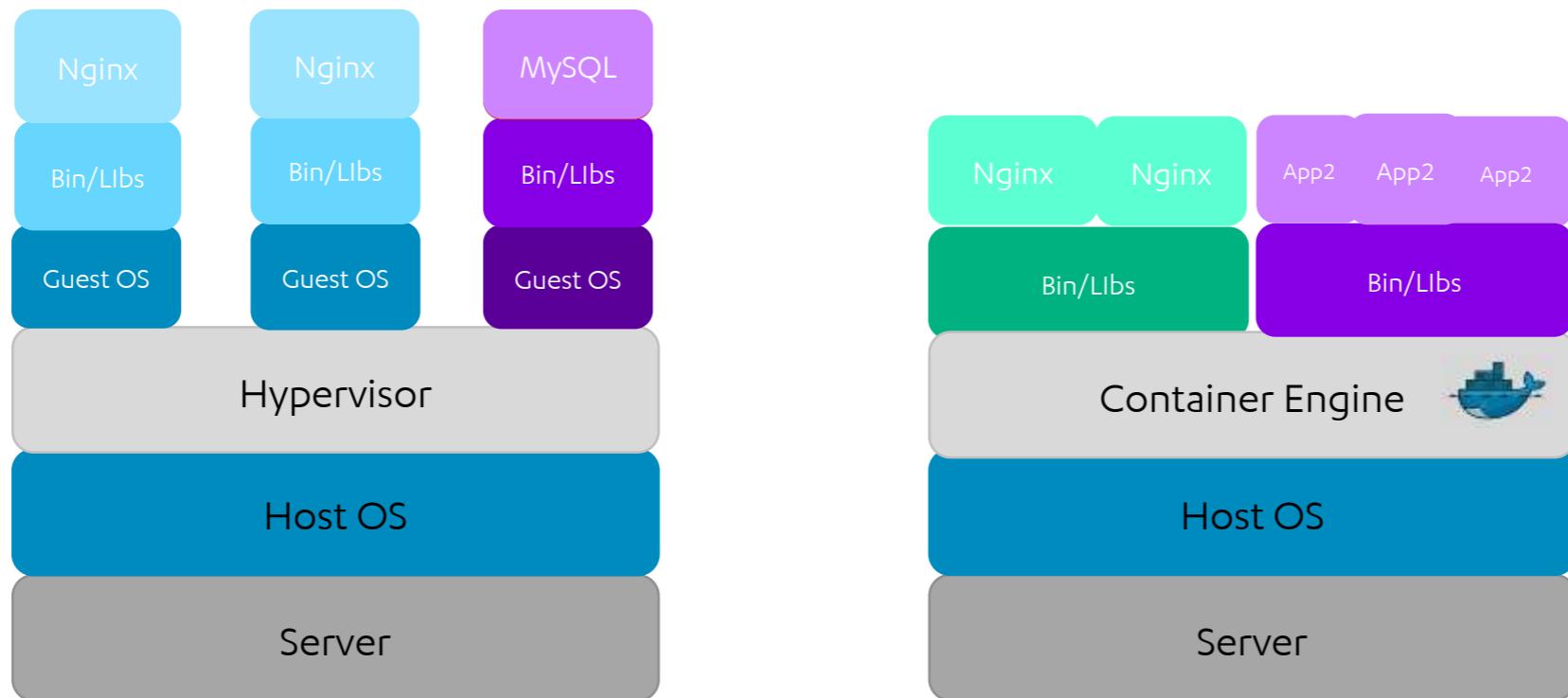


Containers

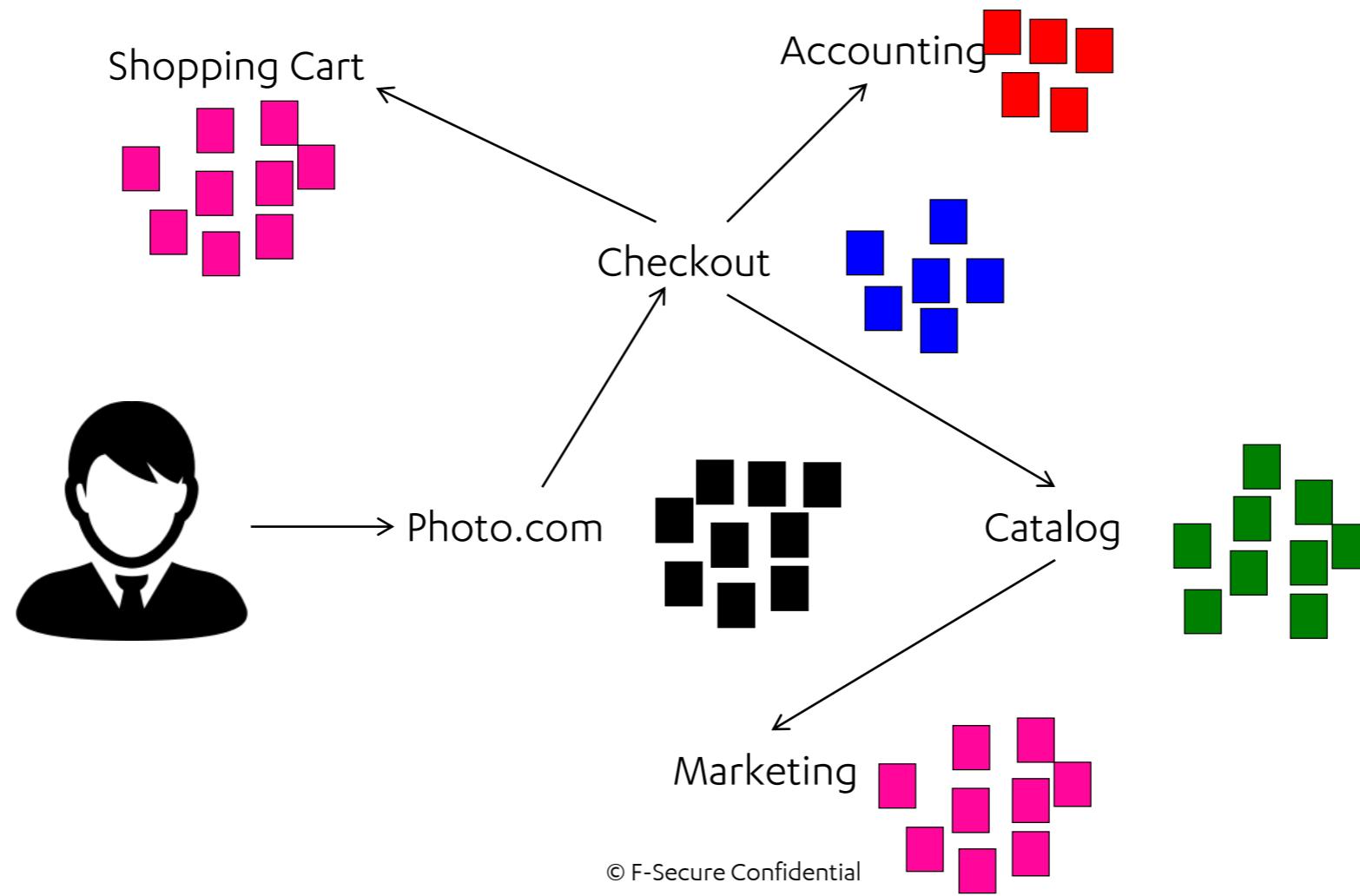


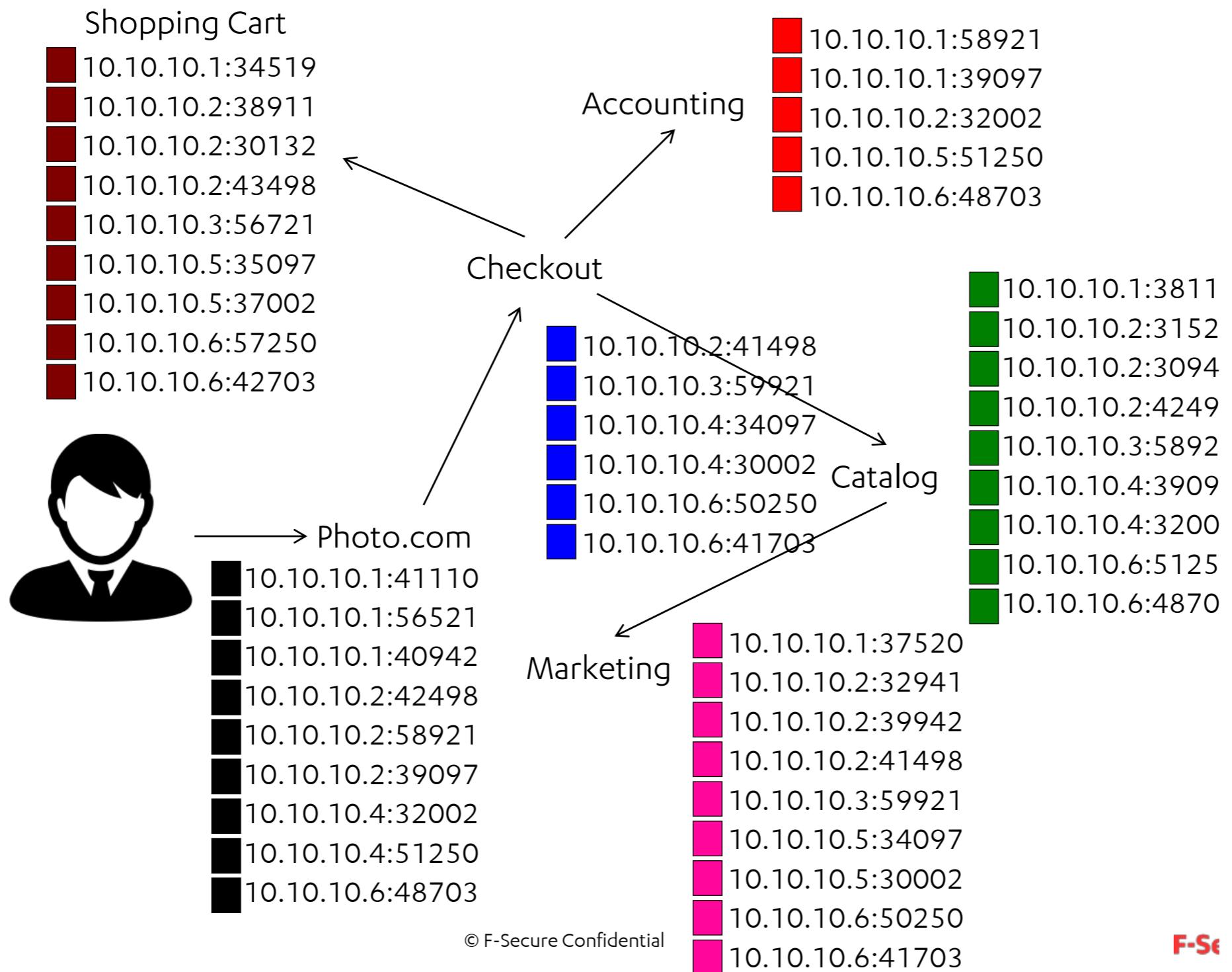
Public Cloud

DOCKER AT A GLANCE



MICRO SERVICES



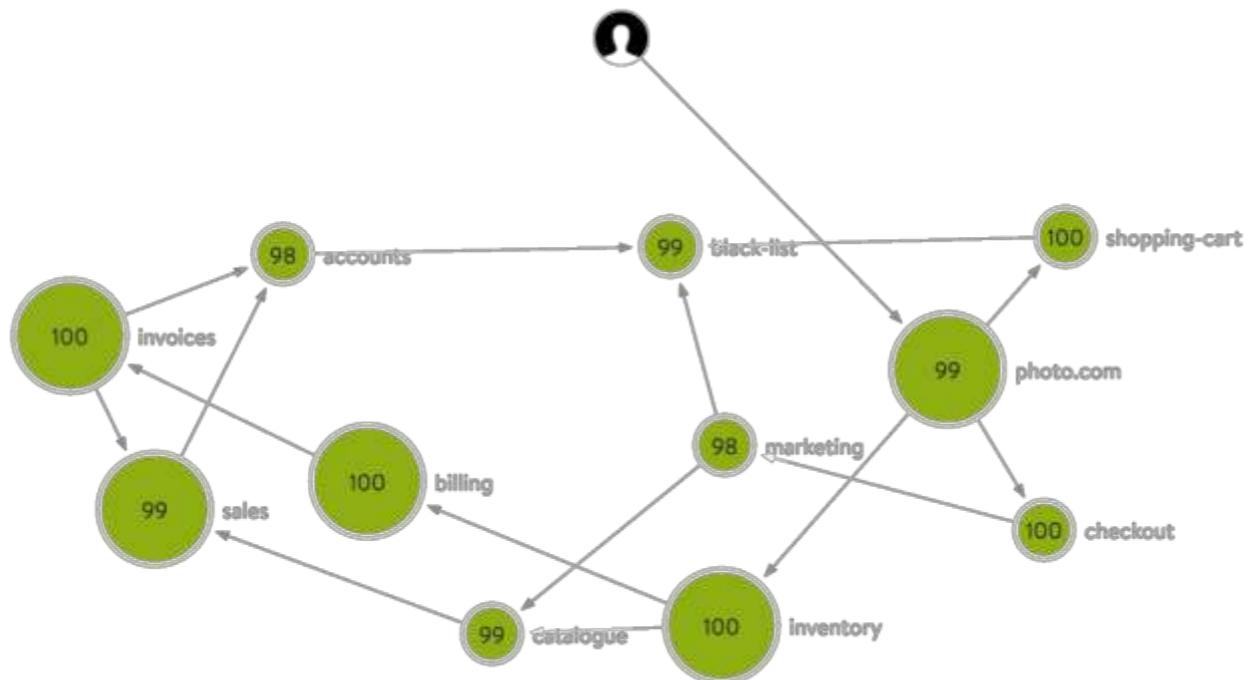


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F-S



MICRO SERVICES



Source: <https://www.avinetworks.com>



Virtualization is the logical
division of physical
computing resources



Virtualization

Started in the 1960's as a way to slice up mainframe resources

There are many resources that can be virtualized - server (compute), storage, and network

There are many forms of virtualization - including server and desktop

Virtualization was popularized in the enterprise datacenter with VMware ESX Server, launched in 2001



Running on a hypervisor, a virtual machine is software-based instance of physical server where a guest operating system has access to emulated virtual hardware.

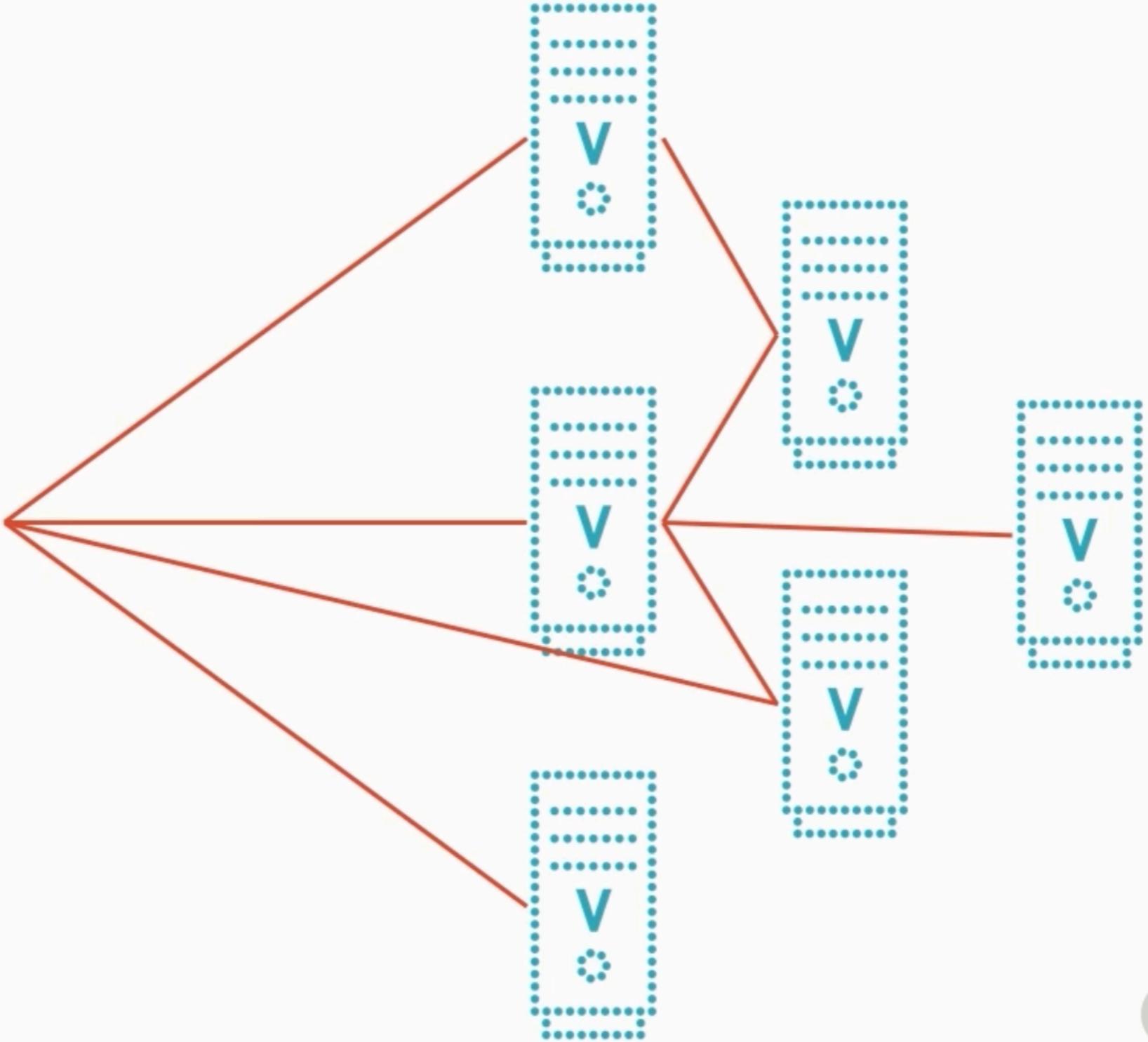
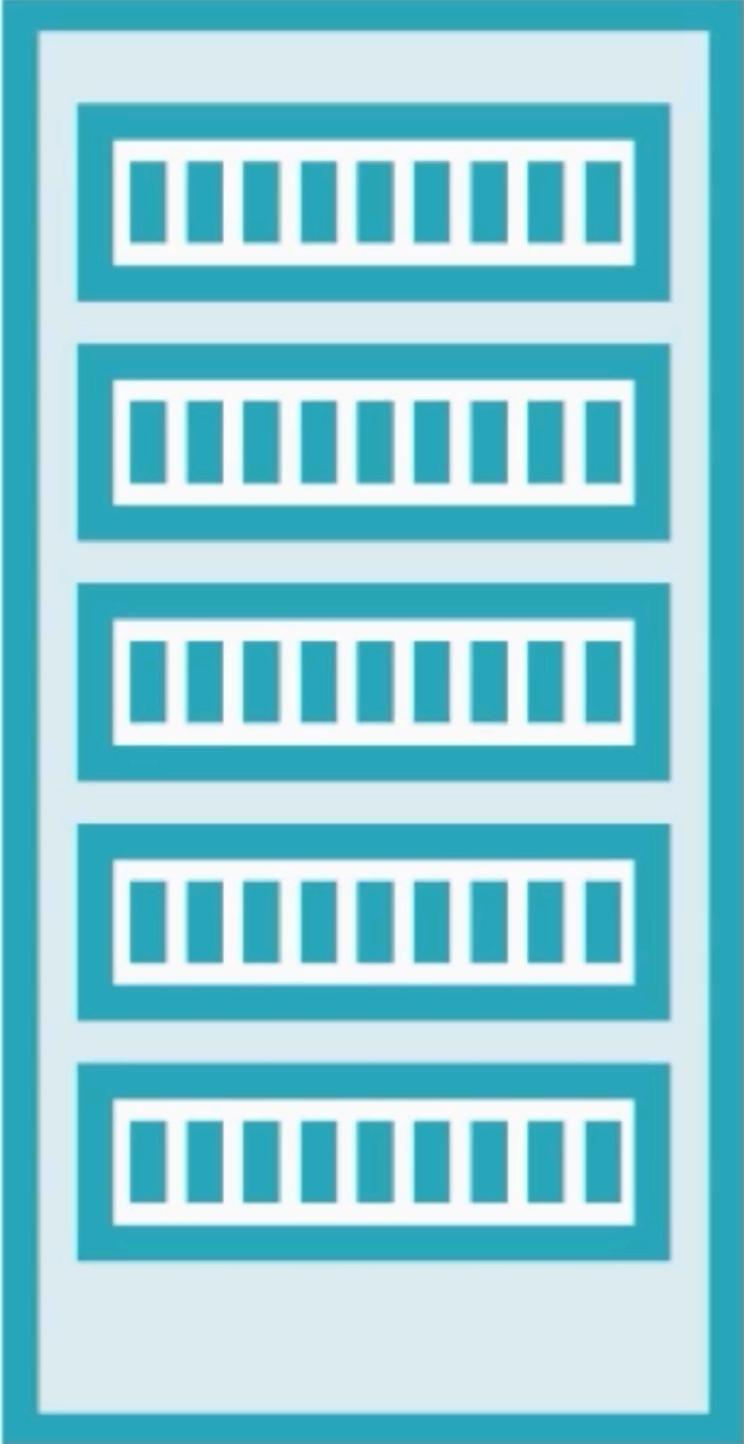
Virtual Machine

A hypervisor is loaded on the virtual host to run virtual machines

Virtual guests run on a virtual host, which provides the physical resources

An operating system and applications are loaded in the guest





A container is operating-system level virtualization where the OS kernel provides isolated user spaces to run specific applications.



Containers

Have been around for a long time
Could run inside a virtual machine
Have less overhead and faster startup time than virtual machines
Have been popularized with the excitement around Docker containers



Kitematic (Beta) File Edit View Window Help

daviddavistx

Containers + NEW

Search for Docker images from Docker Hub

FILTER BY All Recommended My Repos My Images

Recommended

 kitematic hello-world-nginx A light-weight nginx container that demonstrates the features of Kitematic 78 2M CREATE	 ghost ghost Ghost is a free and open source blogging platform written in JavaScript 558 5M CREATE	 jenkins jenkins Official Jenkins Docker image 2.7K 19M CREATE
 redis Redis is an open source key-value store that functions as a data structure server. 3.6K 239M CREATE	 rethinkdb rethinkdb RethinkDB is an open-source, document database that makes it easy to build and scale realtime... 391 6M CREATE	 minecraft minecraft The Minecraft multiplayer server allows two or more players to play Minecraft together 80 42K CREATE
 solr Solr is the popular, blazing-fast, open source enterprise search platform built on Apache... 363 1M CREATE	 elasticsearch elasticsearch Elasticsearch is a powerful open source search and analytics engine that makes data easy to... 2.2K 60M CREATE	 postgres postgres The PostgreSQL object-relational database system provides reliability and data integrity. 3.4K 42M CREATE
 ubuntu-upstart Upstart is an event-based replacement for the /sbin/init daemon which starts processes... 71 392K CREATE	 memcached memcached Free & open source, high-performance, distributed memory object caching system. 730 10M CREATE	 rabbitmq rabbitmq RabbitMQ is a highly reliable enterprise messaging system based on the emerging AMQP... 1.3K 18M CREATE

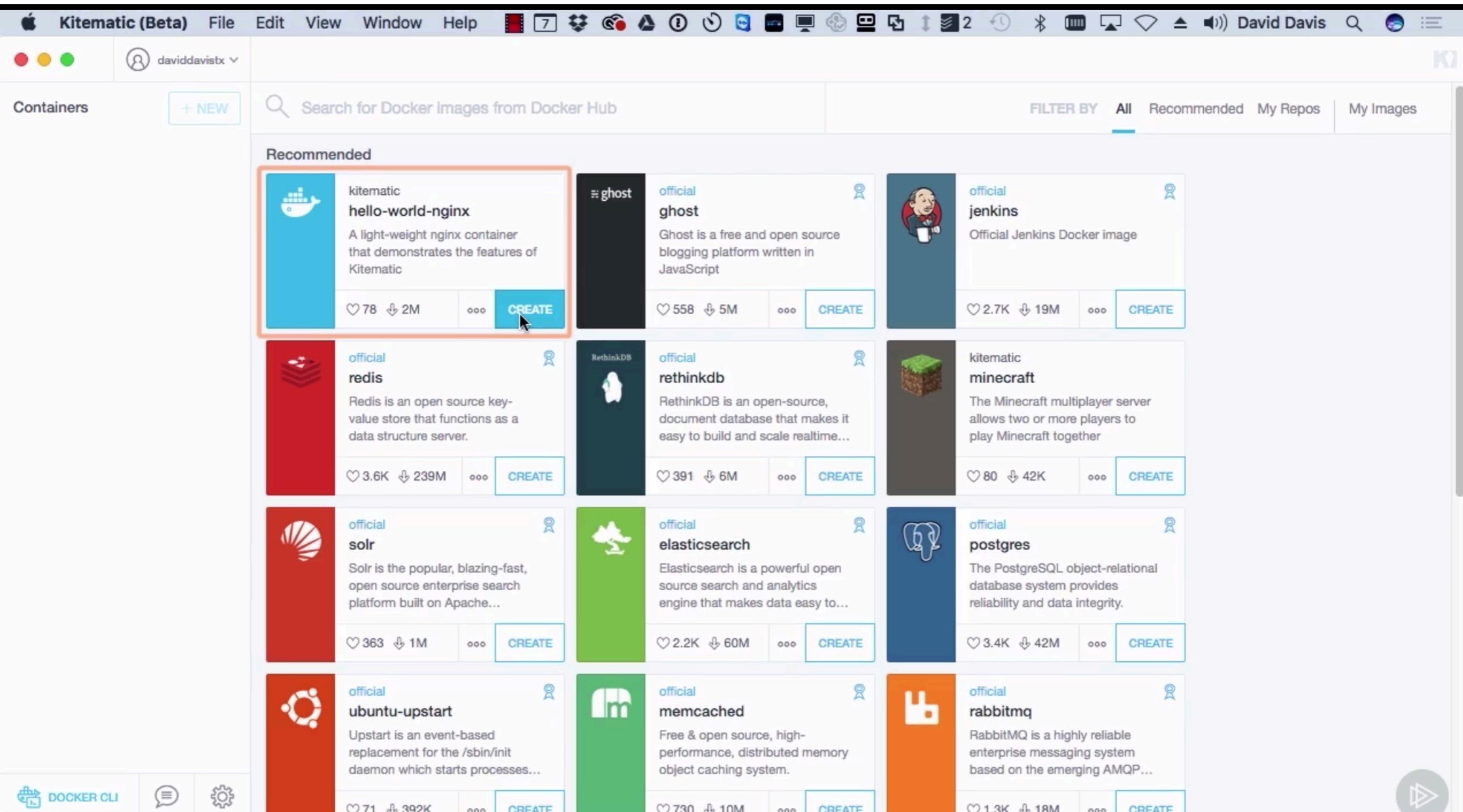
Docker CLI

DOCKER CLI

CHAT

SETTINGS

PLAY



VIVES HBO V

Kitematic (Beta) File Edit View Window Help

Containers **hello-world-nginx** RUNNING

STOP RESTART EXEC DOCS

CONTAINER LOGS

```
/website_files/index.html not found.  
Copying default index.html...  
nginx: [alert] could not open error log file: open() "/var/log/nginx/error.log" failed (2: No such file or directory)  
2017/04/07 19:09:03 [notice] 8#0: using the "epoll" event method  
2017/04/07 19:09:03 [notice] 8#0: nginx/1.4.7  
2017/04/07 19:09:03 [notice] 8#0: built by gcc 4.8.3 (OpenWrt/Linaro GCC 4.8-2014.04 r45973)  
2017/04/07 19:09:03 [notice] 8#0: OS: Linux 4.9.13-moby  
2017/04/07 19:09:03 [notice] 8#0: getrlimit(RLIMIT_NOFILE): 1048576:1048576  
2017/04/07 19:09:03 [notice] 8#0: start worker processes  
2017/04/07 19:09:03 [notice] 8#0: start worker process 9  
172.17.0.1 - - [07/Apr/2017:19:09:04 +0000] "GET / HTTP/1.1" 200 361 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_12_3) AppleWebKit/537.36 (KHTML, like Gecko) Kitematic/0.17.0 Chrome/45.0.2454.85 Electron/0.35.4 Safari/537.36"
```

WEB PREVIEW

Voilà! Your nginx container is running!

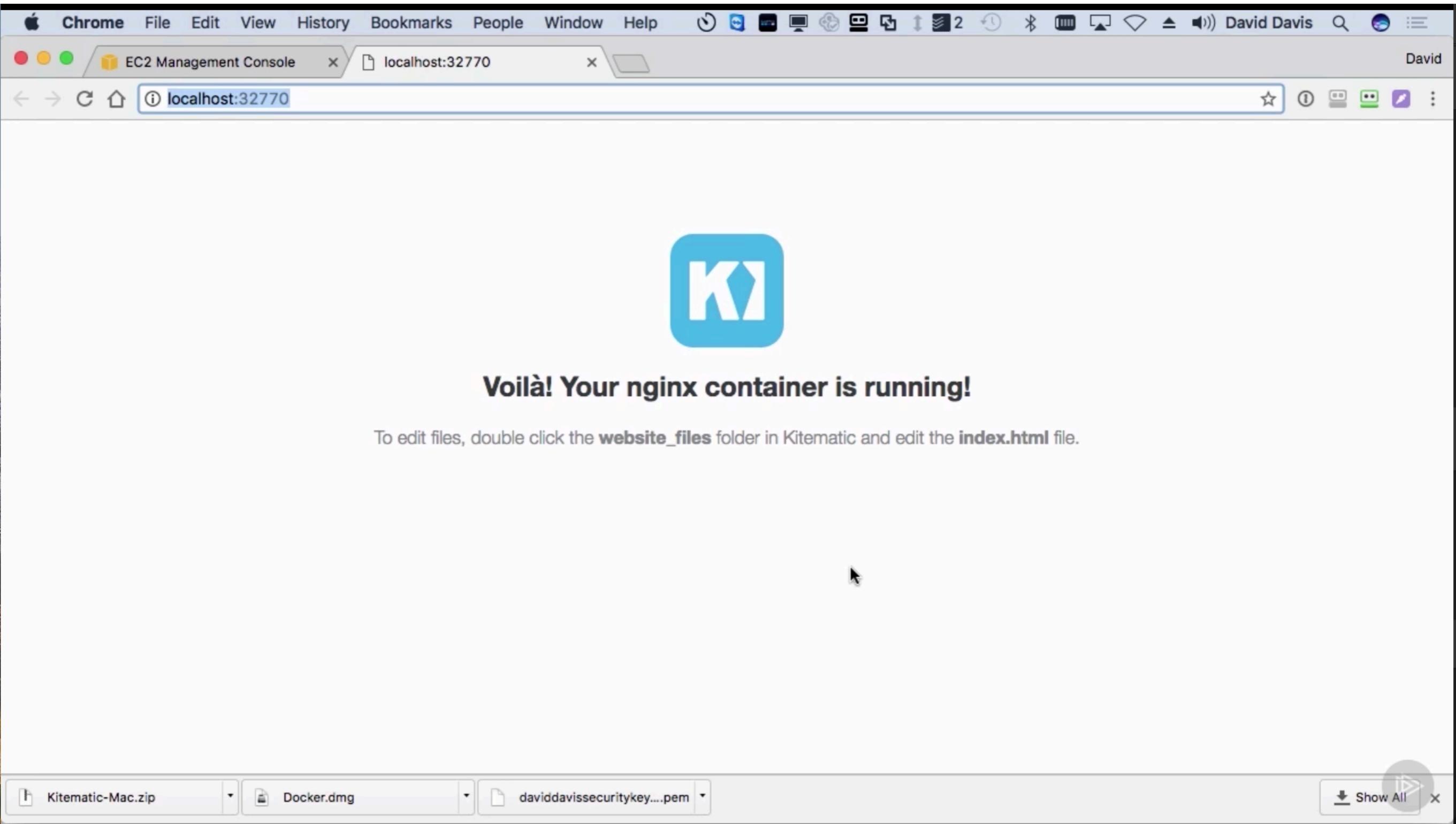
To edit files, double click the website_files folder in Kitematic and edit the index.html file.

VOLUMES

/website_files

DOCKER CLI

Settings



Different Types of Infrastructure as a Service Cloud Offerings

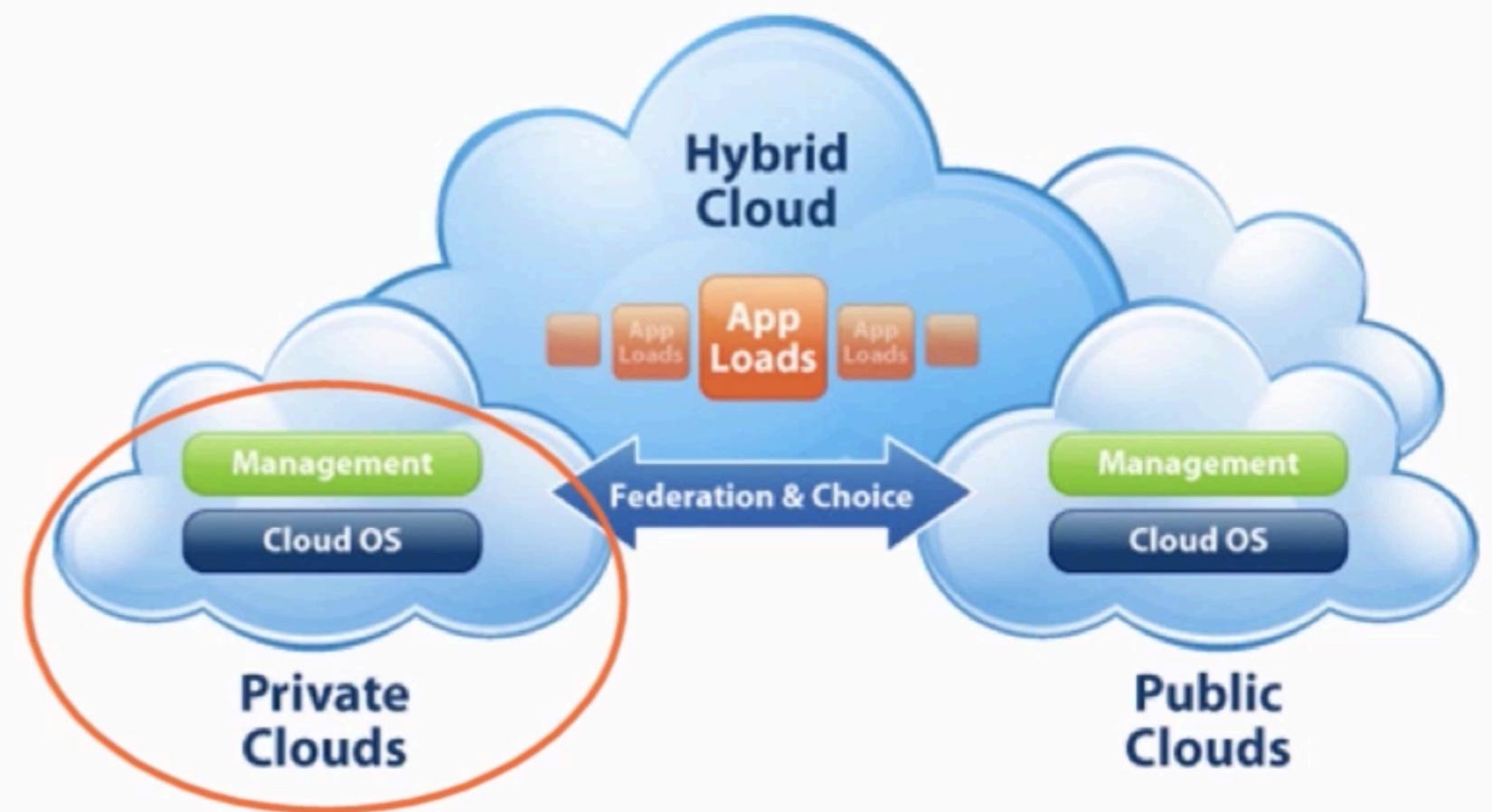


Diagram thanks to VMware.com



Virtualization vs. Private Cloud

Virtualization

Required for cloud computing

Virtualization provides:

Scalability / elastic computing

Resource sharing & pooling

Load balancing

High availability

Portability

Cloning

Private Cloud

On top of virtualization, private cloud provides:

Abstraction of underlying infrastructure layer

Secure multi-tenancy

Self-service portal

Catalog of applications

Chargeback / showback

Potential to burst to a hybrid cloud



Infrastructure as a Service (IaaS)
pricing is, ideally, utility /
consumption / subscription-based
where you pay for what you use



IaaS Pricing Models Can Get Complex...

On-Demand

Spot-Instances

Reserved Instances

Dedicated Hosts



Service Level Agreement (SLA)

Defines what level of performance and availability the IaaS provider will provide you

And what they will do if they are unable to provide you that level of service

Amazon's SLA is located here-
<https://aws.amazon.com/ec2/sla/>



PRODUCTS & SERVICES

Amazon EC2



Last Updated June 1, 2013

Product Details



This Amazon EC2 Service Level Agreement ("SLA") is a policy governing the use of Amazon Elastic Compute Cloud ("Amazon EC2") and Amazon Elastic Block Store ("Amazon EBS") under the terms of the Amazon Web Services Customer Agreement (the "AWS Agreement") between Amazon Web Services, Inc. and its affiliates ("AWS", "us" or "we") and users of AWS' services ("you"). This SLA applies separately to each account using Amazon EC2 or Amazon EBS. Unless otherwise provided herein, this SLA is subject to the terms of the AWS Agreement and capitalized terms will have the meaning specified in the AWS Agreement. We reserve the right to change the terms of this SLA in accordance with the AWS Agreement.

Instances



Developer Resources



FAQs



Getting Started



Amazon EC2 Run Command



Pricing



Service Commitment

AWS will use commercially reasonable efforts to make Amazon EC2 and Amazon EBS each available with a **Monthly Uptime Percentage** (defined below) of at least 99.95%, in each case during any monthly billing cycle (the "Service Commitment"). In the event Amazon EC2 or Amazon EBS does not meet the Service Commitment, you will be eligible to receive a Service Credit as described below.

RELATED LINKS

[Amazon EC2 Spot Instances](#)

Definitions

[Amazon EC2 Reserved Instances](#)[Amazon EC2 Dedicated Hosts](#)

- "Monthly Uptime Percentage" is calculated by subtracting from 100% the percentage of minutes during the month in which Amazon EC2 or Amazon EBS, as applicable, was in the state of "Region Unavailable." Monthly Uptime Percentage measurements exclude downtime resulting directly or indirectly from any Amazon EC2 SLA Exclusion (defined below).
- "Region Unavailable" and "Region Unavailability" mean that more than one Availability Zone in which you are running an instance, within the same Region, is "Unavailable" to you.
- "Unavailable" and "Unavailability" mean:
 - For Amazon EC2, when all of your running instances have no external connectivity.

[Amazon EC2 Dedicated Instances](#)[Windows Instances](#)[VMware Cloud on AWS](#)[Systems Manager](#)[Server Migration Services](#)

vives

PRODUCTS & SERVICES

Amazon EC2

Product Details

Instances

Developer Resources

FAQs

Getting Started

Amazon EC2 Run Command

Pricing

RELATED LINKS

Amazon EC2 Spot Instances

Amazon EC2 Reserved Instances

Amazon EC2 Dedicated Hosts

Amazon EC2 Dedicated Instances

Windows Instances

VMware Cloud on AWS

Systems Manager

Server Migration Services

within the same Region, is "Unavailable" to you.

- "Unavailable" and "Unavailability" mean:
 - For Amazon EC2, when all of your running instances have no external connectivity.
 - For Amazon EBS, when all of your attached volumes perform zero read/write IO, with pending IO in the queue.
- A "Service Credit" is a dollar credit, calculated as set forth below, that we may credit back to an eligible account.

Service Commitments and Service Credits

Service Credits are calculated as a percentage of the total charges paid by you (excluding one-time payments such as upfront payments made for Reserved Instances) for either Amazon EC2 or Amazon EBS (whichever was Unavailable, or both if both were Unavailable) in the Region affected for the monthly billing cycle in which the Region Unavailability occurred in accordance with the schedule below.

Monthly Uptime Percentage

Service Credit Percentage

Monthly Uptime Percentage	Service Credit Percentage
Less than 99.95% but equal to or greater than 99.0%	10%
Less than 99.0%	30%

We will apply any Service Credits only against future Amazon EC2 or Amazon EBS payments otherwise due from you. At our discretion, we may issue the Service Credit to the credit card you used to pay for the billing cycle in which the Unavailability occurred. Service Credits will not entitle you to any refund or other payment from AWS. A Service Credit will be applicable and issued only if the credit amount for the applicable monthly billing cycle is greater than one dollar (\$1 USD). Service Credits may not be transferred or applied to any other account. Unless otherwise provided in the AWS Agreement, your sole and exclusive remedy for any unavailability, non-performance, or other failure by us to provide Amazon EC2 or Amazon EBS is the receipt of a Service Credit (if eligible) in accordance with the terms of this SLA.

Credit Request and Payment Procedures



How Do You Get to the Cloud?

Some companies have “greenfield deployments”, but that’s not common

Here’s what you should consider before you migrate to the cloud:

- Costs associated with using the cloud?
- Security, availability, and performance?
- Migrate vs rebuild?
- Enterprise-grade functionality?
- Tools that can help?



Summary



- What is Virtualization?
- What is a Virtual Machine?
- What is a Container?
- Private Cloud, Hybrid Cloud, and Public Cloud
- Virtualization vs Private Cloud
- IaaS Pricing Models
- Service Level Agreements (SLA)
- Migrating to the Cloud



Overview



IaaS Networking Options

Virtual Private Cloud (VPC) Networking

Connecting to the Cloud with a Virtual Private Network (VPN)



How do servers in the IaaS
cloud connect to the
network?



IaaS Networking Options

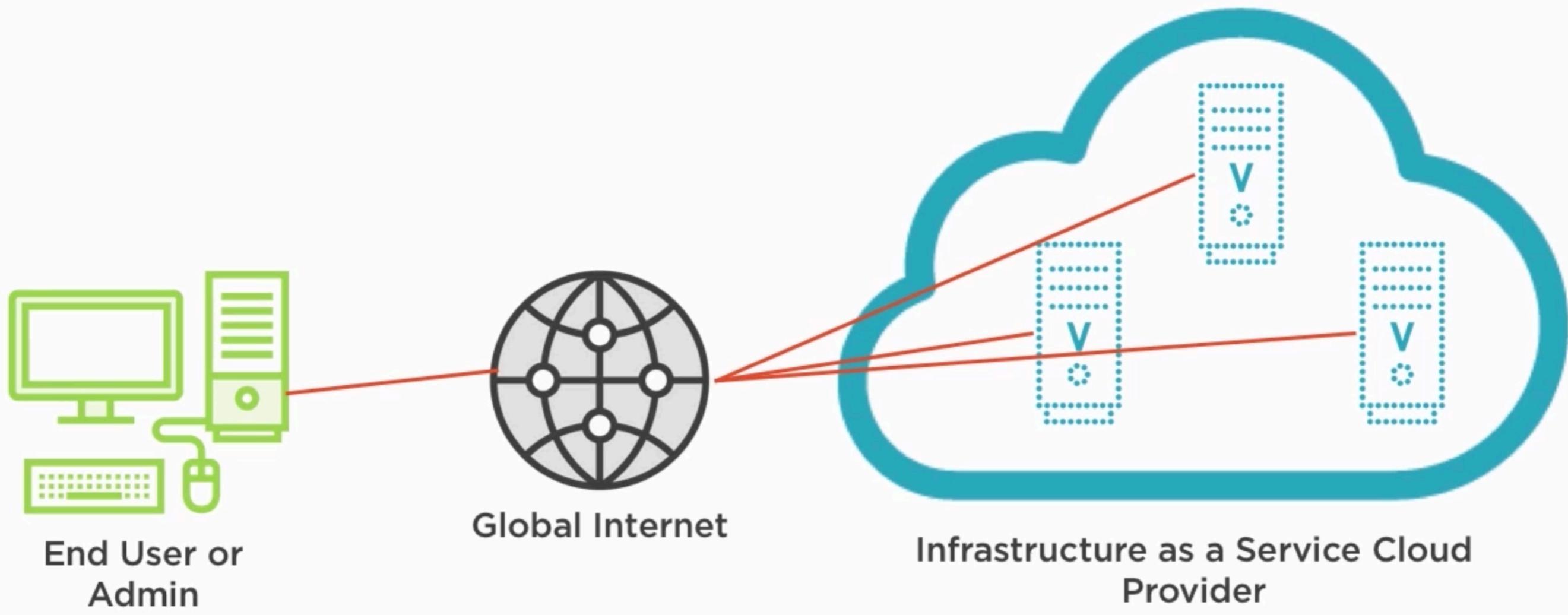
Public Networking

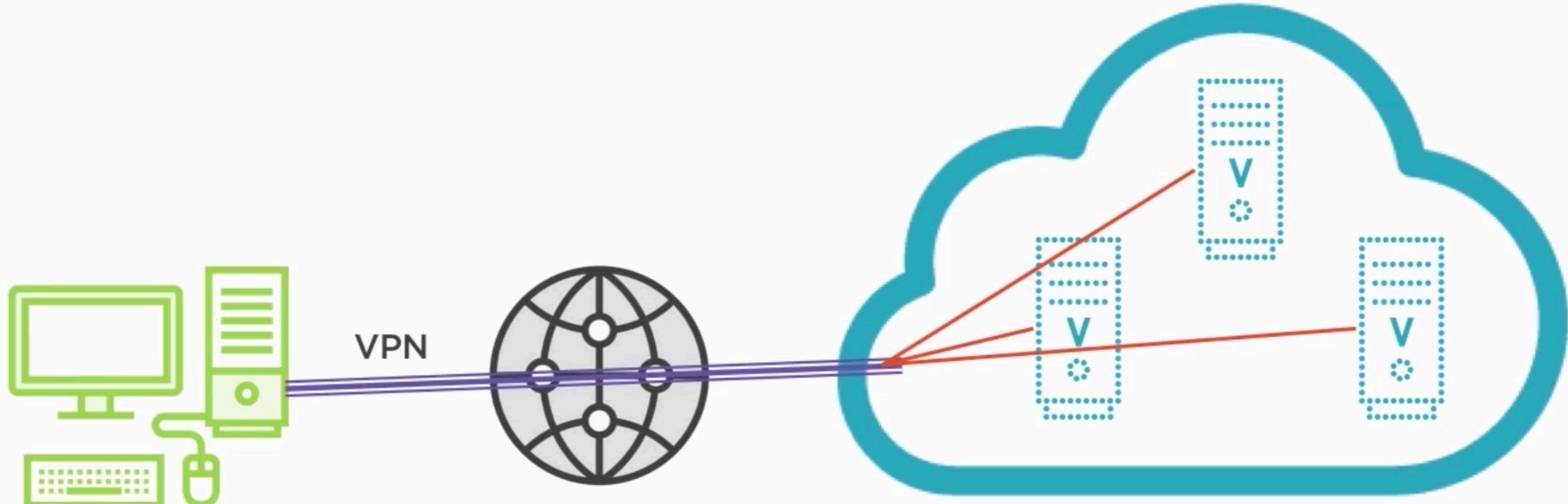
Using public IP addresses

Private Networking

via VPN or, in some cases,
dedicated connections







End User or
Admin

Global Internet

Infrastructure as a Service Cloud
Provider

Virtual Private Cloud (VPC) Networking

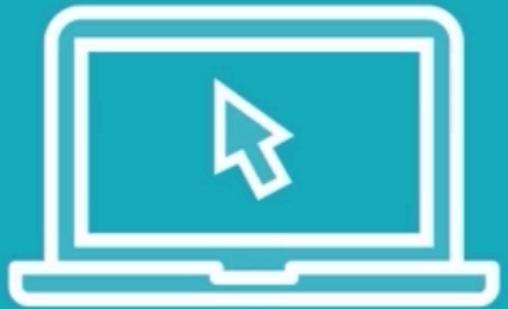
Amazon VPC is NOT a private cloud, but a private network that can be connected to your network

You have control over-

- Private IP address networking
- Routing
- Network access lists
- And VPN connectivity back to your on-premises infrastructure



Demo



Connecting to the Cloud with a Virtual Private Network



Services

Resource Groups



David M. Davis

N. Virginia

Support

History

EC2

Console Home

Search services

Group

A-Z

Compute

- EC2
- EC2 Container Service
- Lightsail
- Elastic Beanstalk
- Lambda
- Batch

Storage

- S3
- EFS
- Glacier
- Storage Gateway

Database

- RDS
- DynamoDB
- ElastiCache
- Redshift

Networking & Content Deliv...

- VPC

Developer Tools

- CodeCommit
- CodeBuild
- CodeDeploy
- CodePipeline
- X-Ray

Management Tools

- CloudWatch
- CloudFormation
- CloudTrail
- Config
- OpsWorks
- Service Catalog
- Trusted Advisor
- Managed Services

Analytics

- Athena
- EMR
- CloudSearch
- Elasticsearch Service
- Kinesis
- Data Pipeline
- QuickSight

Artificial Intelligence

- Lex
- Polly
- Rekognition
- Machine Learning

Internet Of Things

- AWS IoT

Contact Center

- Amazon Connect

Game Development

Application Services

- Step Functions
- SWF
- API Gateway
- Elastic Transcoder

Messaging

- Simple Queue Service
- Simple Notification Service
- SES

Business Productivity

- WorkDocs
- WorkMail
- Amazon Chime

Desktop & App Streaming

- WorkSpaces
- AppStream 2.0

<https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#>



vives

Console Home

 Compute EC2 EC2 Container Service Lightsail Elastic Beanstalk Lambda Batch	 Developer Tools CodeCommit CodeBuild CodeDeploy CodePipeline X-Ray	 Analytics Athena EMR CloudSearch Elasticsearch Service Kinesis Data Pipeline QuickSight	 Application Services Step Functions SWF API Gateway Elastic Transcoder
 Storage S3 EFS Glacier Storage Gateway	 Management Tools CloudWatch CloudFormation CloudTrail Config OpsWorks Service Catalog Trusted Advisor Managed Services	 Artificial Intelligence Lex Polly Rekognition Machine Learning	 Messaging Simple Queue Service Simple Notification Service SES
 Database RDS DynamoDB ElastiCache Redshift	 Security, Identity & Complia... IAM Inspector Certificate Manager Directory Service WAF & Shield Compliance Reports	 Internet Of Things AWS IoT	 Business Productivity WorkDocs WorkMail Amazon Chime
 Networking & Content Deliv... VPC CloudFront Direct Connect Route 53		 Contact Center Amazon Connect	 Desktop & App Streaming WorkSpaces AppStream 2.0
 Migration		 Game Development Amazon GameLift	
		 Mobile Services Mobile Hub	

<https://console.aws.amazon.com/vpc/home?region=us-east-1>





VPC Dashboard

Filter by VPC:

None

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

NAT Gateways

Peering Connections

Security

Network ACLs

Security Groups

VPN Connections

Resources

[Start VPC Wizard](#)[Launch EC2 Instances](#)

Note: Your Instances will launch in the US East (N. Virginia) region.

You are using the following Amazon VPC resources in the US East (N. Virginia) region:

2 VPCs	2 Internet Gateways
0 Egress-only Internet Gateways	6 Subnets
3 Route Tables	2 Network ACLs
0 Elastic IPs	0 VPC Peering Connections
0 Endpoints	0 Nat Gateways
4 Security Groups	0 Running Instances
0 VPN Connections	0 Virtual Private Gateways
0 Customer Gateways	

VPN Connections

Amazon VPC enables you to use your own isolated resources within the AWS cloud, and then connect those resources directly to your own datacenter using industry-standard encrypted IPsec VPN connections.

[Create VPN Connection](#)

Service Health

Current Status

Details

✓ Amazon VPC - US East (N. Virginia) Service is operating normally

✓ Amazon EC2 - US East (N. Virginia) Service is operating normally

[View complete service health details](#)

Additional Information

[VPC Documentation](#)[All VPC Resources](#)[Forums](#)[Report an Issue](#)[Feedback](#)[English](#)

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Step 1: Select a VPC Configuration

VPC with a Single Public Subnet

VPC with Public and Private Subnets

VPC with Public and Private Subnets and Hardware VPN Access

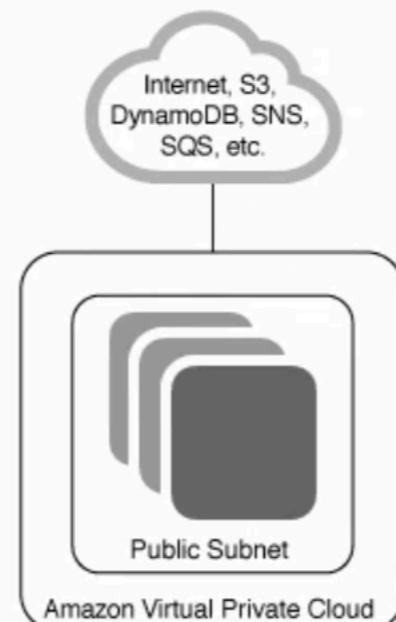
VPC with a Private Subnet Only and Hardware VPN Access

Your instances run in a private, isolated section of the AWS cloud with direct access to the Internet. Network access control lists and security groups can be used to provide strict control over inbound and outbound network traffic to your instances.

Creates:

A /16 network with a /24 subnet. Public subnet instances use Elastic IPs or Public IPs to access the Internet.

Select



[Cancel and Exit](#)



[Feedback](#)

[English](#)

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Services

Resource Groups



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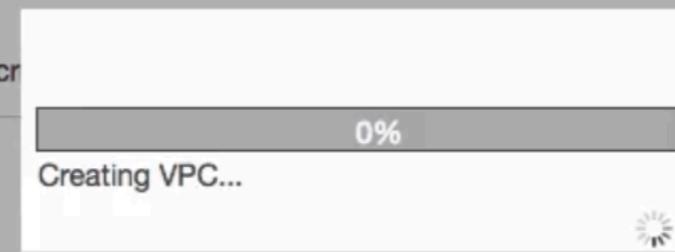
Support

Step 2: VPC with a Single Public Subnet

IPv4 CIDR block: (65531 IP addresses available)IPv6 CIDR block: No IPv6 CIDR Block
 Amazon provided IPv6 CIDR blockVPC name: Public subnet's IPv4 CIDR: (251 IP addresses available)Availability Zone:Subnet name:

You can add more subnets after AWS cr

Service endpoints

Enable DNS hostnames: Yes NoHardware tenancy:

Feedback

English

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Services

Resource Groups



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Support

VPC Dashboard

Filter by VPC:

None

Virtual Private
Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet
Gateways

DHCP Options Sets

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Security

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VPN Connections

VPC Successfully Created

Your VPC has been successfully created.

You can launch instances into the subnets of your VPC. For more information, see [Launching an Instance into Your Subnet](#).

OK

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Services ▾

Resource Groups ▾



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Support ▾

VPC Dashboard

Create VPC

Actions ▾



Filter by VPC:

None

Search VPCs and their proper X

<< 1 to 3 of 3 VPCs >>

Virtual Private Cloud

Your VPCs

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VPN Connections

Customer Gateways

Virtual Private Gateways

VPN Connections

Create VPN Connection**Delete****Download Configuration**

Search VPN Connections

 Name

Create VPN Connection

You currently have no virtual private gateways, you need to create a gateway in order to create a VPN.

Cancel

Select a VPN Connection above

**Feedback****English**

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Cloud Services Resource Groups ⌂

Create VPN Connection Delete Download Configuration

Search VPN Connections and...

Name

Create VPN Connection

You currently have no virtual private gateways, you need to create a gateway in order to create a VPN.

Cancel

No VPNs >>

Customer Gateway Address

Cloud

Your VPCs

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Feedback English

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Services

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Virtual Private Gateways

VPN Connections

Create Virtual Private Gateway

Delete Virtual Private Gateway

Attach to VPC

Detach from VPC



Search Virtual Private Gateways

Name

david

Attach to VPC

Select the VPC to attach to the virtual private gateway

VPC: **vpc-beddaeda** ⓘ

Cancel

Yes, Attach

vgw-6bc72f02 | david

Summary

Tags

ID: **vgw-6bc72f02 | david**

State: detached

Type: ipsec.1

VPC:

Feedback

English

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Services

Resource Groups



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Virtual Private Gateways

VPN Connections

Create Virtual Private Gateway

Delete Virtual Private Gateway

Attach to VPC

Detach from VPC



Search Virtual Private Gateway X

<< 1 to 1 of 1 Virtual Private Gateway >>

	Name	ID	State	Type	VPC
	david	vgw-6bc72f02	attaching	ipsec.1	vpc-beddaeda

vgw-6bc72f02 | david



Summary

Tags

ID: vgw-6bc72f02 | david

State: attaching

Type: ipsec.1

VPC: vpc-beddaeda





Services

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David M. Davis

N. Virginia

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VPN Connections

Customer Gateways

Virtual Private Gateways

VPN Connections

Create Customer Gateway

Delete Customer Gateway



Search Customer Gateways



Name

Create Customer Gateway



Specify the Internet-routable IP address for your gateway's external interface; the address must be static and may be behind a device performing network address translation (NAT). For dynamic routing, also specify your gateway's Border Gateway Protocol (BGP) Autonomous System Number (ASN); this can be either a public or private ASN (such as those in the 64512-65534 range).

Name tag



Routing

Static



IP address



Cancel

Yes, Create

Select a customer gateway above

[Feedback](#) [English](#)

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VIVES HBO V

Summary



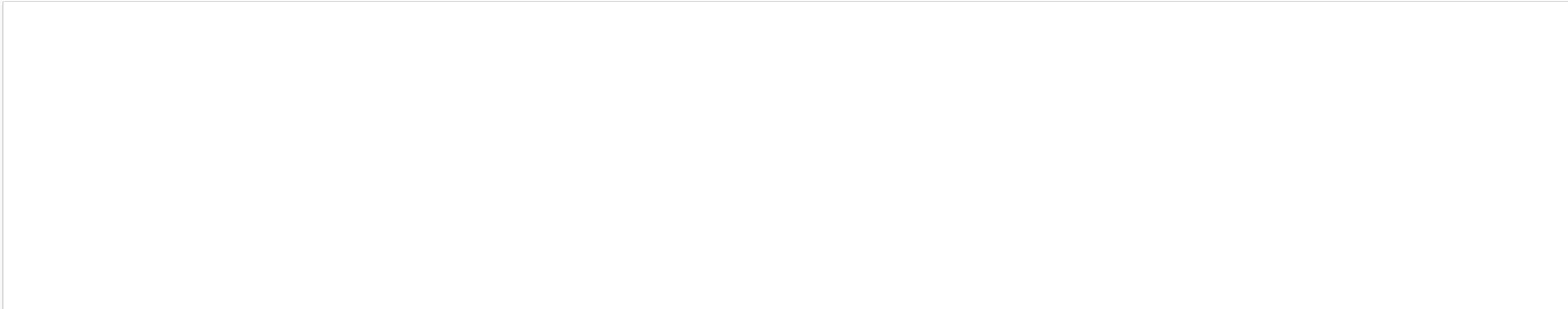
IaaS Networking Options

Virtual Private Cloud (VPC) Networking

Connecting to the Cloud with a Virtual Private Network (VPN)



Storage in the Cloud



Overview



Understanding IaaS Storage

Cloud File Storage

Object Storage

Data Protection in the Cloud



With IaaS where are my
files stored?



Understanding IaaS Storage

Inside the Virtual Machine
Each VM has storage of its own

Outside the Virtual Machine
Each VM can access external storage like block or object storage



Cloud File Storage

Dropbox

Microsoft
OneDrive

Google Drive





Files

Paper

Sharing

Recents

File requests

Deleted files

Name	Modified	Members		
!VMware Workstation for the IT A...	--	Only you	...	Share folder
!VMware_vSphere_Troubleshooting	--	Only you	...	Only you have access
!vSphere 5	--	Only you	...	Upload files
!vSphere 5.1 New Features	--	Only you	...	New folder
A+ Video	--	Only you	...	Show deleted files
CCNA Security Banners	--	Only you	...	
CompTIA Cloud Essentials	--	Only you	...	
Hyper-V and Virtualizaiton slides	--	Only you	...	
ISA	--	Only you	...	
Linux	--	Only you	...	

[Help](#) [Privacy](#) [...](#)

! Pluralsight - TrainSignal COURSES



Search

WORKFOLDER - VMware vRealize Operations Manager
VMware Assignments
Services and Selling Tools
evaluating-vsphere-environment-security
Raw client video
Dropbox (Personal)
Dropbox (ActualTech)
Clients
!Desktop - Temp Files
Desktop
Documents
Downloads
Movies
david
Searching "SSD-500GB"
Applications
iCloud Drive
All My Files
AirDrop
Logins
Sync

Devices

David iMac 5K

Name	Date Modified	Size	Kind
► !VMware Workstation for the IT Admin	Apr 1, 2016, 12:15 PM	--	Folder
► !VMware_vSphere_Troubleshooting	Apr 1, 2016, 8:30 AM	--	Folder
► !vSphere 5	Mar 30, 2016, 12:59 AM	--	Folder
► !vSphere 5.1 New Features	Apr 1, 2016, 11:17 AM	--	Folder
► A+ Video	Apr 1, 2016, 9:25 AM	--	Folder
► CCNA Security Banners	Mar 31, 2016, 8:31 AM	--	Folder
► CompTIA Cloud Essentials	Apr 1, 2016, 11:09 AM	--	Folder
► Hyper-V and Virtualization slides	Apr 1, 2016, 11:24 AM	--	Folder
► ISA	Apr 1, 2016, 11:02 AM	--	Folder
► Linux	Apr 1, 2016, 2:40 PM	--	Folder
► MS Virtual Server	Apr 1, 2016, 11:04 AM	--	Folder
► SHARED-Joan-at-Pearson	Mar 29, 2016, 2:31 PM	--	Folder
► Videos	Mar 30, 2016, 9:21 AM	--	Folder
► Virtual-Labs	Apr 1, 2016, 2:40 PM	--	Folder
► VMware ESX banners	Mar 31, 2016, 9:42 AM	--	Folder
► VMware ESX Server	Apr 1, 2016, 9:06 AM	--	Folder
► VMware Server & Workstation	Apr 1, 2016, 9:26 AM	--	Folder
► VMware Tech Resource Center - TRC	Apr 1, 2016, 1:50 PM	--	Folder
► VMware Technical Resources	Apr 1, 2016, 2:21 AM	--	Folder
► VMware vCloud Director Essentials	Apr 1, 2016, 3:25 PM	--	Folder
► vSphere Advanced Features for VCP5 Preparation	Apr 1, 2016, 1:10 PM	--	Folder
► vSphere Banners	Mar 31, 2016, 11:27 AM	--	Folder
► vSphere Package - May 2010	Mar 31, 2016, 12:53 PM	--	Folder
► vSphere Pro Vol 1	Apr 1, 2016, 11:04 AM	--	Folder
► Windows XP	Mar 31, 2016, 9:21 AM	--	Folder

SCULLY > Dropbox (Personal) > ! Pluralsight - TrainSignal COURSES > Virtual-Labs

1 of 25 selected, 2.81 TB available



Virtual-Labs

Search

Name	Date Modified	Size	Kind
Configuring Your New Virtual Infrastructure-formatted lab book.pdf	Mar 23, 2012, 10:54 AM	2.4 MB	PDF Document
David D - NEW	Apr 1, 2016, 2:40 PM	--	Folder
DD IN PROG	Apr 1, 2016, 11:06 AM	--	Folder
lab-template-matrix.xlsx	Apr 4, 2012, 6:58 PM	12 KB	Micros...(xlsx)
Lesson 1	Mar 30, 2016, 8:03 AM	--	Folder
Lesson 2	Mar 31, 2016, 7:36 AM	--	Folder
Lesson 3	Apr 1, 2016, 11:02 AM	--	Folder
lesson14.docx	Mar 24, 2012, 10:14 PM	24 KB	Micros...(docx)
lesson14.pdf	Mar 26, 2012, 6:05 PM	18 KB	Micros...(docx)
lesson14	Mar 26, 2012, 6:12 PM	20 KB	Micros...(docx)
Lesson 5	Mar 29, 2016, 2:24 PM	--	Folder
Lesson 6	Apr 1, 2016, 1:50 PM	--	Folder
Lesson 7	Mar 29, 2016, 2:24 PM	--	Folder
Lesson 8	Mar 29, 2016, 2:24 PM	--	Folder
Lesson 9	Mar 30, 2016, 8:03 AM	--	Folder
Lesson 10	Mar 31, 2016, 1:45 AM	--	Folder
Lesson 11	Mar 31, 2016, 8:03 AM	--	Folder
Lesson 12	Mar 29, 2016, 2:24 PM	--	Folder
Lesson 13	Mar 31, 2016, 1:45 AM	--	Folder
Lesson 14	Mar 31, 2016, 1:45 AM	--	Folder
Lesson 15	Mar 31, 2016, 5:36 AM	--	Folder
1.pdf	Oct 26, 2011, 5:05 PM	717 KB	PDF Document
TS Vir	Feb 2, 2012, 12:46 AM	22 KB	Micros...(docx)
TS-Vir	Oct 7, 2011, 10:05 AM	17 KB	Micros...(docx)
vSph	Jan 3, 2012, 6:06 AM	62 KB	Micros...(docx)
vSph	Jan 4, 2012, 8:36 AM	1.8 MB	Micros...(docx)
vSph	Apr 4, 2012, 9:12 AM	1.7 MB	Micros...(docx)
vSph	Nov 14, 2011, 11:50 AM	603 KB	Micros...(docx)
vSph	Nov 14, 2011, 11:50 AM	603 KB	Micros...(docx)
vSph	Apr 1, 2012, 5:35 PM	606 KB	Micros...(docx)
TrainSignal COURSES	Virtual-Labs	lesson14.docx	

Services

SCULLY

Open

Open With

Move to Trash

Share...

Manage Access...

Copy Dropbox Link

View on Dropbox.com

Version History

View Comments

Get Info

Rename

Compress "lesson14.docx"

Duplicate

Make Alias

Quick Look "lesson14.docx"

Share

Copy "lesson14.docx"

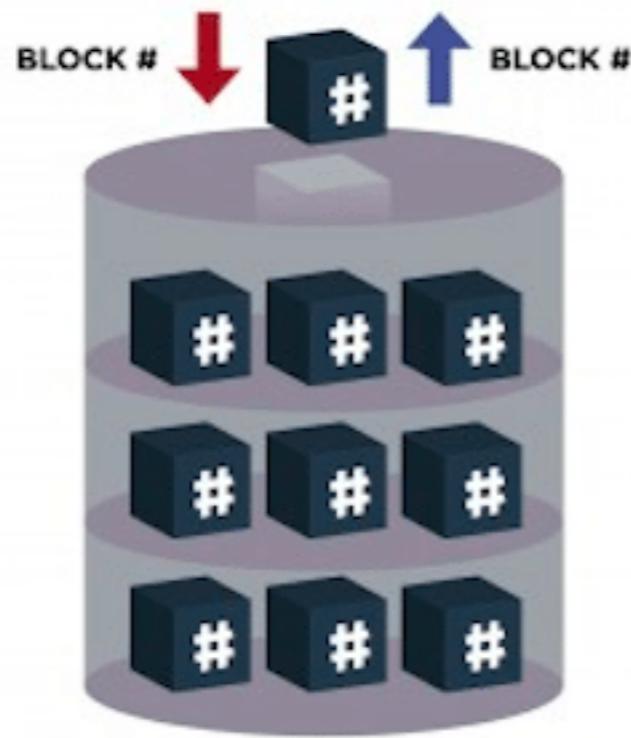
Show View Options

Tags...

Services

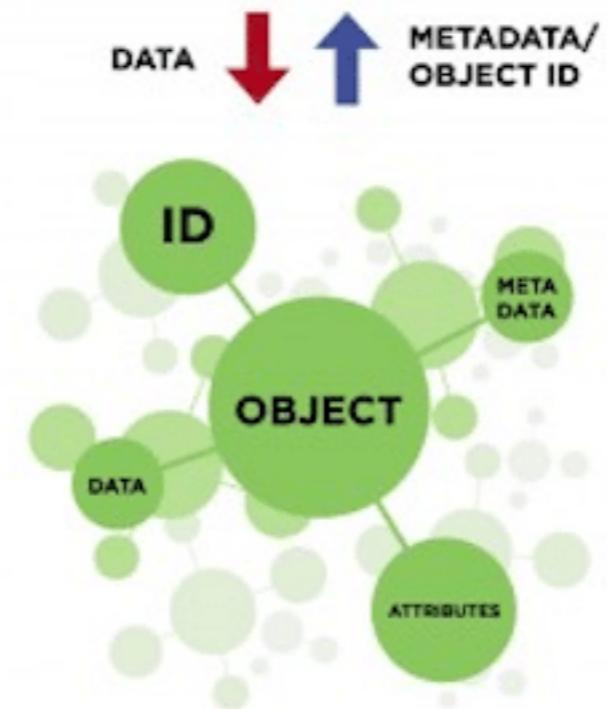


BLOCK STORAGE



vs.

OBJECT STORAGE



Object Storage

Storage for unstructured data

Usually used for pictures, videos, and archival data



S3 Simple Storage Service

Microsoft Azure
Blob Storage





History

VPC

EC2

Console Home



Compute

- EC2
- EC2 Container Service
- Lightsail ↗
- Elastic Beanstalk
- Lambda
- Batch



Developer Tools

- CodeCommit
- CodeBuild
- CodeDeploy
- CodePipeline
- X-Ray



Analytics

- Athena
- EMR
- CloudSearch
- Elasticsearch Service
- Kinesis
- Data Pipeline
- QuickSight ↗



Application Services

- Step Functions
- SWF
- API Gateway
- Elastic Transcoder



Storage



- EFS
- Glacier
- Storage Gateway



Management Tools

- CloudWatch
- CloudFormation
- CloudTrail
- Config
- OpsWorks
- Service Catalog
- Trusted Advisor
- Managed Services



Artificial Intelligence

- Lex
- Polly
- Rekognition
- Machine Learning



Business Productivity

- WorkDocs
- WorkMail
- Amazon Chime ↗



Database

- RDS
- DynamoDB
- ElastiCache
- Redshift



Security, Identity & Complia...

- IAM
- Inspector
- Certificate Manager
- Directory Service
- WAF & Shield



Internet Of Things

- AWS IoT



Desktop & App Streaming

- WorkSpaces
- AppStream 2.0



Networking & Content Deliv...

- VPC



Game Development

<https://console.aws.amazon.com/s3/home?region=us-east-1>

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Services ▾

Resource Groups ▾



David M. Davis ▾

Global ▾

Support ▾

Want to manage your data based on what it is instead of where it's stored? Try S3 Object Tagging



Amazon S3



Switch to the old console



Discover the new console



Quick tips

 Search for buckets[+ Create bucket](#)[Delete bucket](#)[Empty bucket](#)

2 Buckets

2 Regions



Bucket name	Region	Date created
elasticbeanstalk-us-east-1-811736816661	US East (N. Virginia)	Sep 20, 2016 4:20:53 AM
elasticbeanstalk-us-west-2-811736816661	US West (Oregon)	Oct 15, 2014 1:38:10 AM





Services ▾

Resource Groups ▾



David M. Davis ▾

Global ▾

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Want to manage your data based on what you do?



Amazon S3

Search for buckets

+ Create bucket

Delete bucket

Bucket name ↑↓

elasticbeanstalk-us-east-1-811736816

elasticbeanstalk-us-west-2-811736816

① Name and region

② Set properties

③ Set permissions

④ Review



Quick tips

Regions ↗

Name and region

Bucket name ⓘ

Enter DNS-compliant bucket name

Region

Select a region

Copy settings from an existing bucket

Select bucket (optional)

2 Buckets

Create

Cancel

Next



Data Protection in the Cloud

Virtual Machines

Disaster Recovery to the Cloud

Zerto

VEEAM

 **Infrascale™**
Total Data Protection



Data Protection in the Cloud

Files

File Backup to the Cloud



Summary



Understanding IaaS Storage

Cloud File Storage

Object Storage

Data Protection in the Cloud



Infrastructure as a Service: Security



Overview



Cloud Security Concerns

Encryption

Compliance

Vulnerabilities and Mitigation



Are you concerned about Cloud
Security?



Cloud Security Concerns

- Is my data safe?**
- Who can see my data?**
- Can my data be modified?**
- Who is responsible for securing my data?**



Unless you have managed security,
the security of your data in the
cloud is under *shared responsibility*.





AWS Cloud Security

Protect your data with cloud-powered security.

I'd like information about Security in the Cloud »

[Cloud Security](#)[Penetration Testing](#)[Security Bulletins](#)[Resources](#)[Compliance](#)[Partners](#)

Cloud security at AWS is the highest priority. As an AWS customer, you will benefit from a data center and network architecture built to meet the requirements of the most security-sensitive organizations.

An advantage of the AWS cloud is that it allows customers to scale and innovate, while maintaining a secure environment. Customers pay only for the services they use, meaning that you can have the security you need, but without the upfront expenses, and at a lower cost than in an on-premises environment.

We worked closely with the Amazon team to develop a security model, which we believe enables us to operate more securely in the public cloud than we can even in our data centers.

Rob Alexander
CIO, Capital One

Capital One



vives



Encryption

The process of converting information or data into ciphertext, which cannot be easily understood by anymore except those who have the key.



Compliance

Laws
Requirements
Policies
Rules
Standards
Governance
Regulations



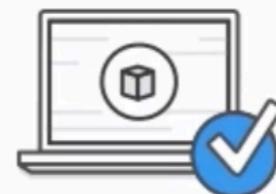
Cloud Security Resources

I'd like information about Security in the Cloud

[Cloud Security](#)[Penetration Testing](#)[Security Bulletins](#)[Resources](#)[Compliance](#)[Partners](#)

Developer Documents

- [AWS Security Credentials](#)
- [Using Encryption in S3](#)
- [List of Secure Endpoints](#)
- [Configuring EC2 Security Groups](#)
- [Server Access Logging in S3](#)
- [Signing AWS API Requests](#)



<https://aws.amazon.com/compliance/>



Assurance Programs

From San Francisco to Singapore - We've got you covered



Certifications / Attestations

C5 [Germany]

Cyber Essentials Plus [UK]

DoD SRG

FedRAMP

FIPS

IRAP [Australia]

ISO 9001

ISO 27001

ISO 27017

ISO 27018

MLPS Level 3 [China]

MTCS [Singapore]



Laws, Regulations, and Privacy

CISPE

DNB [Netherlands]

EU Model Clauses

FERPA

GLBA

HIPAA

HITECH

IRS 1075

ITAR

My Number Act [Japan]

U.K. DPA - 1988

VPAT / Section 508



Alignments / Frameworks

CIS

CJIS

CSA

ENS [Spain]

EU-US Privacy Shield

FISC

FISMA

G-Cloud [UK]

GxP (FDA CFR 21 Part 11) 

ICREA

IT Grundschutz [Germany]

MITA 3.0



Vulnerabilities and Mitigation

Who keeps my operating systems and applications up to date?

Who performs backups of the data, should something happen? Have they been tested?

Who performs security scans of my virtual machines?



Summary



Cloud Security Concerns

Encryption

Compliance

Vulnerabilities and Mitigation



Comparing Infrastructure as a Service (IaaS) and Platform as a Service (PaaS)



Overview



What is Platform as a Service?
How do IaaS and PaaS Compare?
Demo AWS Elastic Beanstalk



Platform as a Service is for Developers



Platform as a Service (PaaS)

A cloud service for developers who want to develop, run, and manage applications

No servers, storage, network, OS, middleware, or databases are needed

Examples of PaaS are:

- AWS Elastic Beanstalk
- Microsoft Azure App Service
- Google App Engine
- Cloud Foundry
- Heroku



IaaS vs PaaS

IaaS	PaaS
All servers, storage, and networking are provided	PaaS runs on top of infrastructure as a service
Developers must install their own software such as web servers, database servers, etc.	Developers have access to already installed web servers, database servers, and development libraries



Pizza as a Service

Published on July 30, 2014



Albert Barron [Follow](#)

Sr. Software Client Architect at IBM



746



113



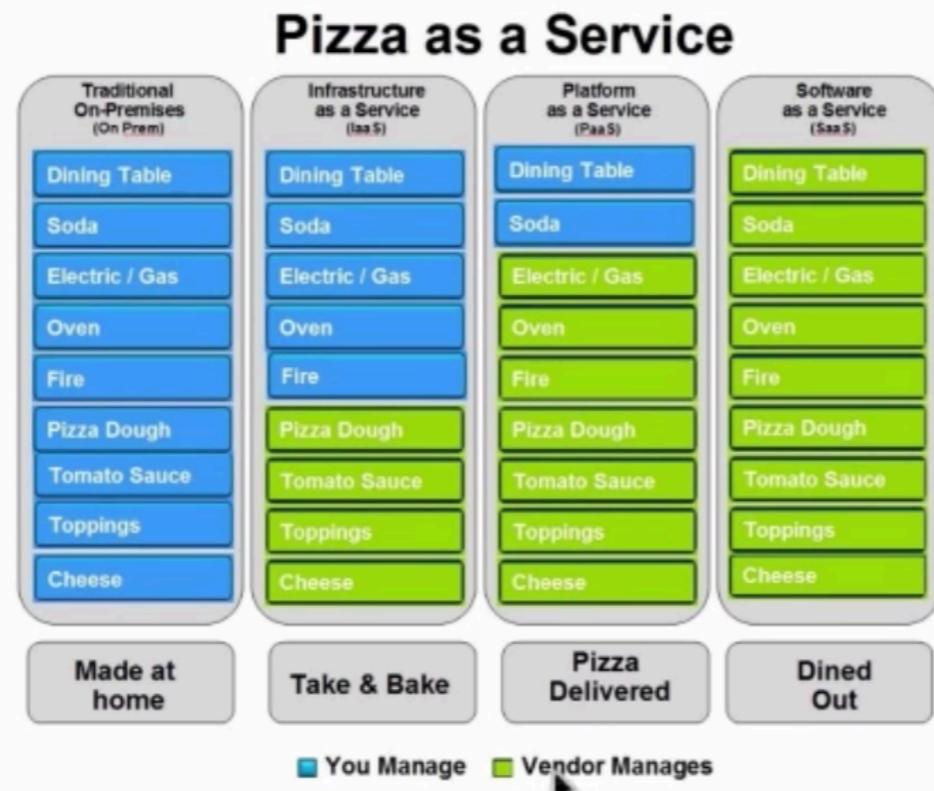
29

As technologists, we tend to live in a world of acronyms and terms quite common to those of us in the industry. But this abbreviated language can seem like a foreign language to those outside of it. Recently, while on a bicycle ride, a friend and I were talking technology. In our conversation, I mentioned SOA and the not so recent shift from WS to REST and JSON. I brought up some of the most current cloud announcements and how easily we can now dynamically scale applications or spin up environments. However, five minutes into my rambling ~~the conversation~~ he asked, “What’s SOA?” Without missing a beat I replied, “It’s a TLA”.

I then stopped, not literally of course, as I would’ve caused a crash in our weekend makeshift peloton! I stopped when I quickly realized I had just committed a cardinal sin. I assumed he knew the terminology and the technology, though he isn’t in the field. And admittedly, since I am passionate about technology, I’m sometimes blissfully



Discover your next job at LinkedIn and connect with others who work for you.

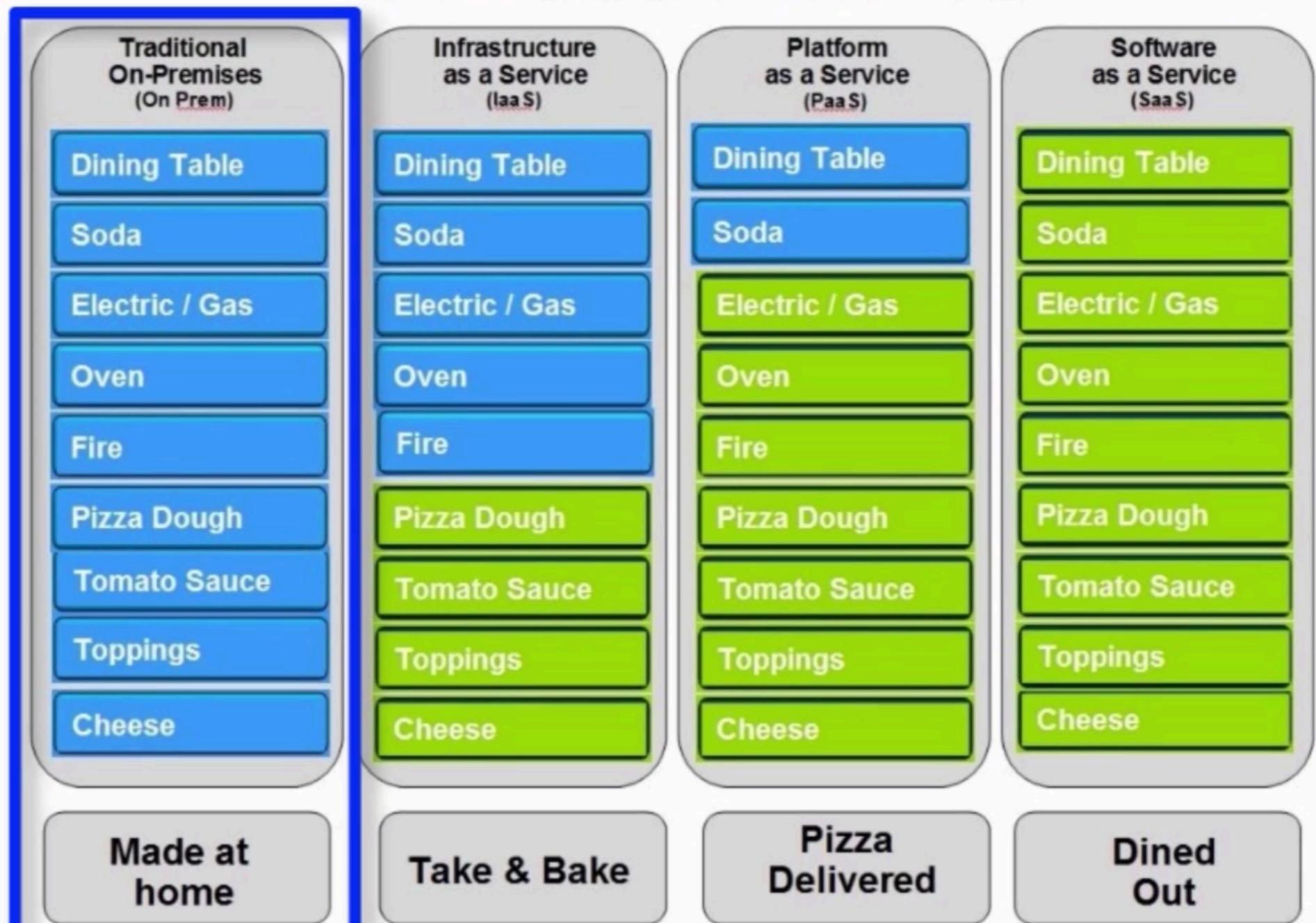


Time for lunch..pizza anyone?

As it turns out, the pizza example was something he could relate to and it reaffirmed that sometimes we simply have to take a step back and keep things simple. It's not a new concept, but it's something a techie easily forgets! Thanks to Professor Gilson for helping me to remember that sometimes keeping it simple is the best way to deliver a message.



Pizza as a Service



■ You Manage ■ Vendor Manages



Demo



Amazon's PaaS: Elastic Beanstalk



Services ▾

Resource Groups ▾



David M. Davis ▾

N. Virginia ▾

Support ▾

History

Console Home

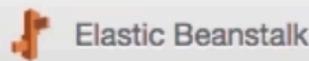
S3

VPC

EC2

Search services				Group	A-Z
Compute	Developer Tools	Analytics	Application Services		
EC2	CodeCommit	Athena	Step Functions		
EC2 Container Service	CodeBuild	EMR	SWF		
Lightsail	CodeDeploy	CloudSearch	API Gateway		
Elastic Beanstalk	CodePipeline	Elasticsearch Service	Elastic Transcoder		
Lambda	X-Ray	Kinesis			
Batch		Data Pipeline			
		QuickSight			
Storage	Management Tools	Artificial Intelligence	Messaging		
S3	CloudWatch	Lex	Simple Queue Service		
EFS	CloudFormation	Polly	Simple Notification Service		
Glacier	CloudTrail	Rekognition	SES		
Storage Gateway	Config	Machine Learning			
	OpsWorks				
	Service Catalog				
Database	Trusted Advisor	Internet Of Things	Business Productivity		
RDS	Managed Services	AWS IoT	WorkDocs		
DynamoDB			WorkMail		
ElastiCache			Amazon Chime		
Redshift					
Networking & Content Deliv...	Security, Identity & Complia...	Contact Center	Desktop & App Streaming		
VPC	IAM	Amazon Connect	WorkSpaces		
	Inspector		AppStream 2.0		
	Certificate Manager				
	Directory Service				
	WAF & Shield				
		Game Development			

<https://console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1>

[Learn More](#)[Get Started using Elastic Beanstalk](#)[What Is AWS Elastic Beanstalk?](#)[How Does AWS Elastic Beanstalk Work?](#)

Featured

[Create your own custom platform](#)

Command Line Interface (v3)

[Installing the AWS EB CLI](#)[EB CLI Command Reference](#)

If you want to use a command line to create, manage, and scale your Elastic Beanstalk applications, please use the Elastic Beanstalk Command Line Interface (EB CLI).

Get Started

```
$ mkdir HelloWorld  
$ cd HelloWorld  
$ eb init -p PHP  
$ echo "Hello World" > index.html  
$ eb create dev-env  
$ eb open
```

To deploy updates to your applications, use

All Applications

Filter by Application Name:

test

Actions ▾

No environments currently exist for this application. [Create one now.](#)



AWS Elastic Beanstalk



Developer Guide (API Version 2010-12-01)

Documentation - This Guide

Search

[What Is AWS Elastic Beanstalk?](#)

[Getting Started](#)

[How Elastic Beanstalk Works](#)

[Elastic Beanstalk Platforms](#)

[Tutorials and Samples](#)

[Managing Applications](#)

[Managing Environments](#)

[Environment Configuration](#)

[Monitoring an Environment](#)

[Integrating AWS Services](#)

[Your Local Development Environment](#)

[The EB CLI](#)

[Working with Docker](#)

The following tasks will help you get started with Elastic Beanstalk to create, view, deploy, and update your application as well as edit and terminate your environment. You'll use the AWS Management Console, a point-and-click web-based interface, to complete these tasks.

Sections

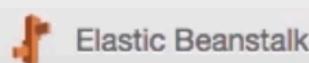
- [Step 1: Sign up for the Service](#)
- [Step 2: Create an Application](#)
- [Step 3: View Information About Your Environment](#)
- [Step 4: Deploy a New Application Version](#)
- [Step 5: Change Configuration](#)
- [Step 6: Clean Up](#)
- [Where to Go Next](#)

Step 1: Sign up for the Service

If you're not already an AWS customer, you'll need to sign up. Signing up allows you to access Elastic Beanstalk and other AWS services that you will need, such as Amazon Elastic Compute Cloud (Amazon EC2), Amazon Simple Storage Service (Amazon S3), and Amazon Simple Notification Service (Amazon SNS).

To sign up for an AWS account

1. Open the [Elastic Beanstalk console](#).
2. Follow the instructions shown.

[Learn More](#)[Get Started using Elastic Beanstalk](#)[What Is AWS Elastic Beanstalk?](#)[How Does AWS Elastic Beanstalk Work?](#)

Featured

[Create your own custom platform](#)

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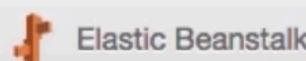
All Applications

test

Filter by Application Name:

Actions ▾

No environments currently exist for this application. [Create one now.](#)



Try the new design

We're testing a new design for the environment creation wizard. [Opt in now](#) to try it and let us know what you think!



New Environment

Environment Type

Application Version

Environment Info

Additional Resources

Configuration Details

Environment Tags

Permissions

Review Information

New Environment

AWS Elastic Beanstalk has two types of environment tiers to support different types of web applications. Web servers are standard applications that listen for and then process HTTP requests, typically over port 80. Workers are specialized applications that have a background processing task that listens for messages on an Amazon SQS queue. Worker applications post those messages to your application by using HTTP.

Web Server Environment

Provides resources for an AWS Elastic Beanstalk web server in either a single instance or load-balancing, auto scaling environment. [Learn more.](#)

[Create web server](#)

Worker Environment*

Provides resources for an AWS Elastic Beanstalk worker application in either a single instance or load-balancing, auto scaling environment. [Learn more.](#)

[Create worker](#)[Cancel](#)

**i** Try the new design

We're testing a new design for the environment creation wizard. [Opt in now](#) to try it and let us know what you think!

New Environment

Environment Type

Environment Type

Application Version

Environment Info

Additional Resources

Configuration Details

Environment Tags

Permissions

Review Information

Choose the platform and type of environment to launch.

Predefined configuration:

✓ Select a platform

Preconfigured

.NET (Windows/IIS)

Java

Node.js

PHP

Python

Ruby

Tomcat

Go

Packer

Preconfigured – Docker

GlassFish

Go

Python

Generic

Docker

Multi-container Docker

Looking for a different platform? Let us know.

Learn more

Cancel

Previous

Next





Try the new design



We're testing a new design for the environment creation wizard. [Opt in now](#) to try it and let us know what you think!

New Environment

Environment Type

Application Version

Environment Info

Additional Resources

Configuration Details

Environment Tags

Permissions

Review Information

Environment Type

Choose the platform and type of environment to launch.

Predefined configuration:

Docker



Looking for a different platform? Let us know.

AWS Elastic Beanstalk will create an environment running Docker 1.12.6 on 64bit Amazon Linux 2016.09 v2.5.2.

Environment type:

Single instance



Learn more



Retrieving values for configuration source...

Cancel

Previous

Next



Try the new design

We're testing a new design for the environment creation wizard. [Opt in now](#) to try it and let us know what you think!

New Environment

Environment Type

Application Version

Environment Info

Application Version

Select a source for your application version.

Source: Sample application

Upload your own ([Learn more](#))

No file chosen

S3 URL

(e.g. <https://s3.amazonaws.com/s3Bucket/s3Key>)

Deployment Preferences

Elastic Beanstalk will update your application in batches so as to avoid downtime when deploying.

Deployment policy: [Learn more](#)

Healthy threshold:

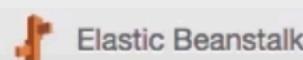
Ignore health check:

Batch size: Percentage

% of the fleet at a time

Fixed





Try the new design

We're testing a new design for the environment creation wizard. [Opt in now](#) to try it and let us know what you think!



New Environment

Environment Type

Application Version

Environment Info

Additional Resources

Configuration Details

Environment Tags

Permissions

Review Information

Environment Information

Enter your environment information.

Environment name:

test-env

Environment URL:

test-env-dmd

.us-east-1.elasticbeanstalk.com

[Check availability](#)

Description:

Optional: 200 character maximum

[Cancel](#)[Previous](#)[Next](#)



Services

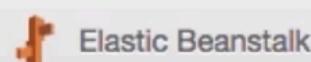
Resource Groups



David M. Davis

N. Virginia

Support



test

Create New Environment

All Applications > test > test-env (Environment ID: e-76u2j6qk2x, URL: test-env-dmd.us-east-1.elasticbeanstalk.com)

Actions

Dashboard

Configuration

Logs

Health

Monitoring

Alarms

Managed Updates

Events

Tags

Overview

Refresh



Health

Ok

Causes

Running Version

Sample Application

Upload and Deploy



Configuration

64bit Amazon Linux 2016.09

v2.5.2 running Docker 1.12.6

Change

Show All

Recent Events

Time	Type	Details
2017-04-08 01:25:55 UTC-0400	INFO	Successfully launched environment: test-env
2017-04-08 01:25:09 UTC-0400	INFO	Environment health has transitioned from Pending to Ok. Initialization completed 15 seconds ago and took 5 minutes.



VIVES HBO V



Services ▾

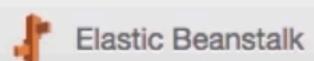
Resource Groups ▾



David M. Davis ▾

N. Virginia ▾

Support ▾



test ▾

Create New Environment

All Applications > test > test-env (Environment ID: e-76u2j6qk2x, URL: [test-env-dmd.us-east-1.elasticbeanstalk.com](#))

Actions ▾

Dashboard

Overview

⟳ Refresh

Configuration

Logs

Health

Monitoring

Alarms

Managed Updates

Events

Tags



Health

Ok

Causes

Running Version

Sample Application

Upload and Deploy



Configuration

64bit Amazon Linux 2016.09
v2.5.2 running Docker 1.12.6

Change

Recent Events

Show All

Time	Type	Details
2017-04-08 01:25:55 UTC-0400	INFO	Successfully launched environment: test-env
2017-04-08 01:25:09 UTC-0400	INFO	Environment health has transitioned from Pending to Ok. Initialization completed 15 seconds ago and took 5 minutes.

test-env-dmd.us-east-1.elasticbeanstalk.com



VIVES HBO V

Congratulations!

Your Docker Container is now running in Elastic Beanstalk on your own dedicated environment in the AWS Cloud.

Video Tutorials

- YouTube: [Run a Docker Container from the Docker Registry](#)
- YouTube: [Use Private Docker Repositories](#)

Sample Apps

- GitHub: [PHP and Amazon RDS](#)
- GitHub: [Python, DynamoDB, and SNS](#)

Documentation

- [Deploying Docker with AWS Elastic Beanstalk](#)
- [AWS Elastic Beanstalk overview](#)
- [AWS Elastic Beanstalk concepts](#)



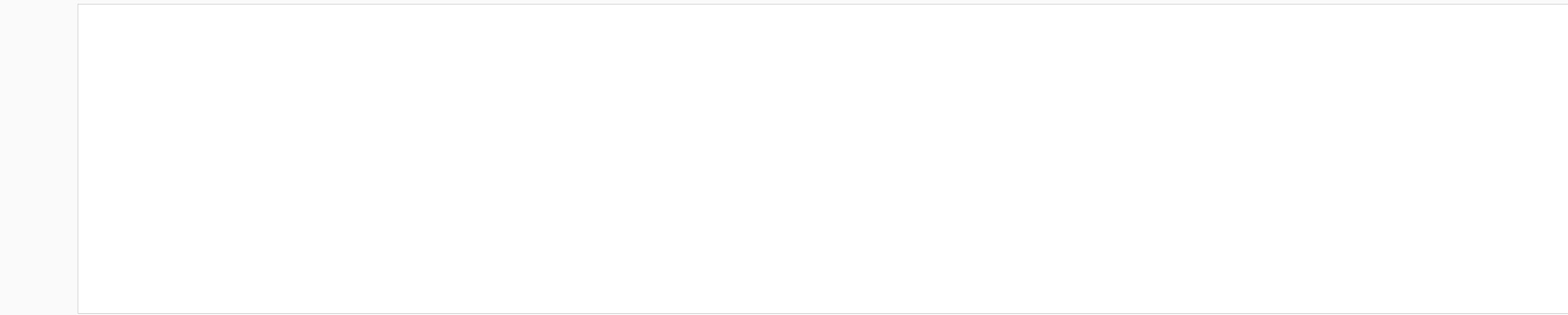
Summary



What is Platform as a Service?
How do IaaS and PaaS Compare?
Demo AWS Elastic Beanstalk



Software as a Service (SaaS) Cloud Solutions



Overview



Benefits of SaaS Cloud Solutions

Demo Office 365

Demo Google G Suite

Demo Salesforce.com



Benefits of Software as a Service Solutions

- No hardware to buy or install**
- No software to buy or install**
- No software to maintain or upgrade**
- You only pay for what you use**
- New features are included**
- Most everyone can afford and use applications that used to be only for large corporations**



Demo



Demo of Office 365



G-Suite

<https://miras.smartschool.be/Documents/Download/Index/htm/0/courseID/6686/docID/158200/sslID/708>

Office 365

<https://miras.smartschool.be/Documents/Download/Index/htm/0/courseID/6686/docID/158202/sslID/708>

Salesforce

<https://miras.smartschool.be/Documents/Download/Index/htm/0/courseID/6686/docID/158204/sslID/708>



Summary



Benefits of SaaS Cloud Solutions

Demo Office 365

Demo Google G Suite

Demo Salesforce.com



Oefeningen:

Documenteer alle stappen met screenshots. Stel een document op (Naam_voornaam.docx/pdf...) met alle screenshots en beperkt uitleg indien nodig. Dien het in in de voorziene uploadzone voor de deadline.

- Creeer 1 Windows VM op een platform naar keuze
- Zorg dat je die van op afstand met RDP kan overnemen
- Creeer 1 Linux VM op een platform naar keuze
- Zorg dat je toegang hebt via SSH
- BONUS (niet verplicht) zorg dat je die kan overnemen met RDP
- Zet 1 SQL server op in de cloud op een platform naar keuze
- Zorg dat je daarmee kan verbinden met een SQL client op je computer

Permanente evaluatie, deadline 01/11/2018 8:30 AM

