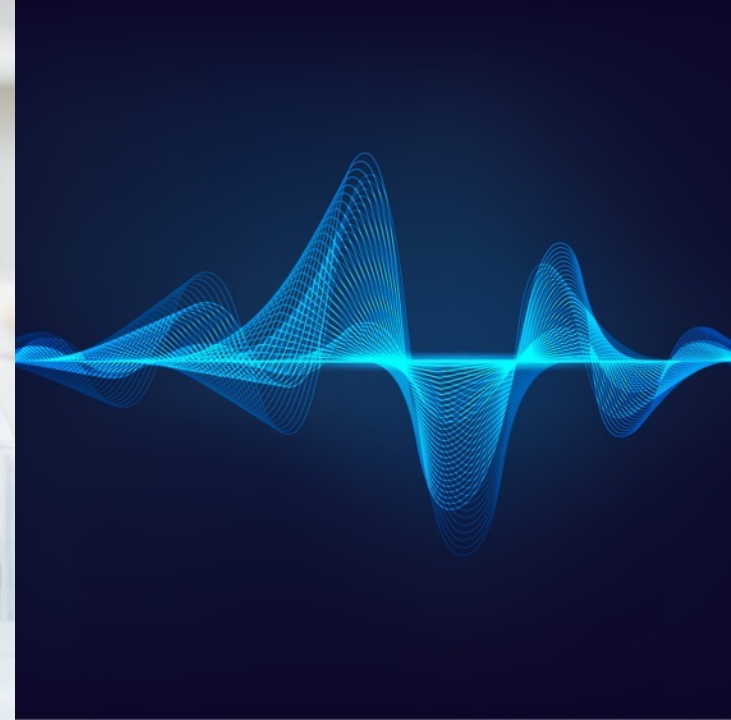


CLOUD, CONTAINERS, AND OPEN SOURCE...OH MY! HOW THOSE BUZZWORDS CAN HELP US TRANSFORM OUR WORK

AGENDA

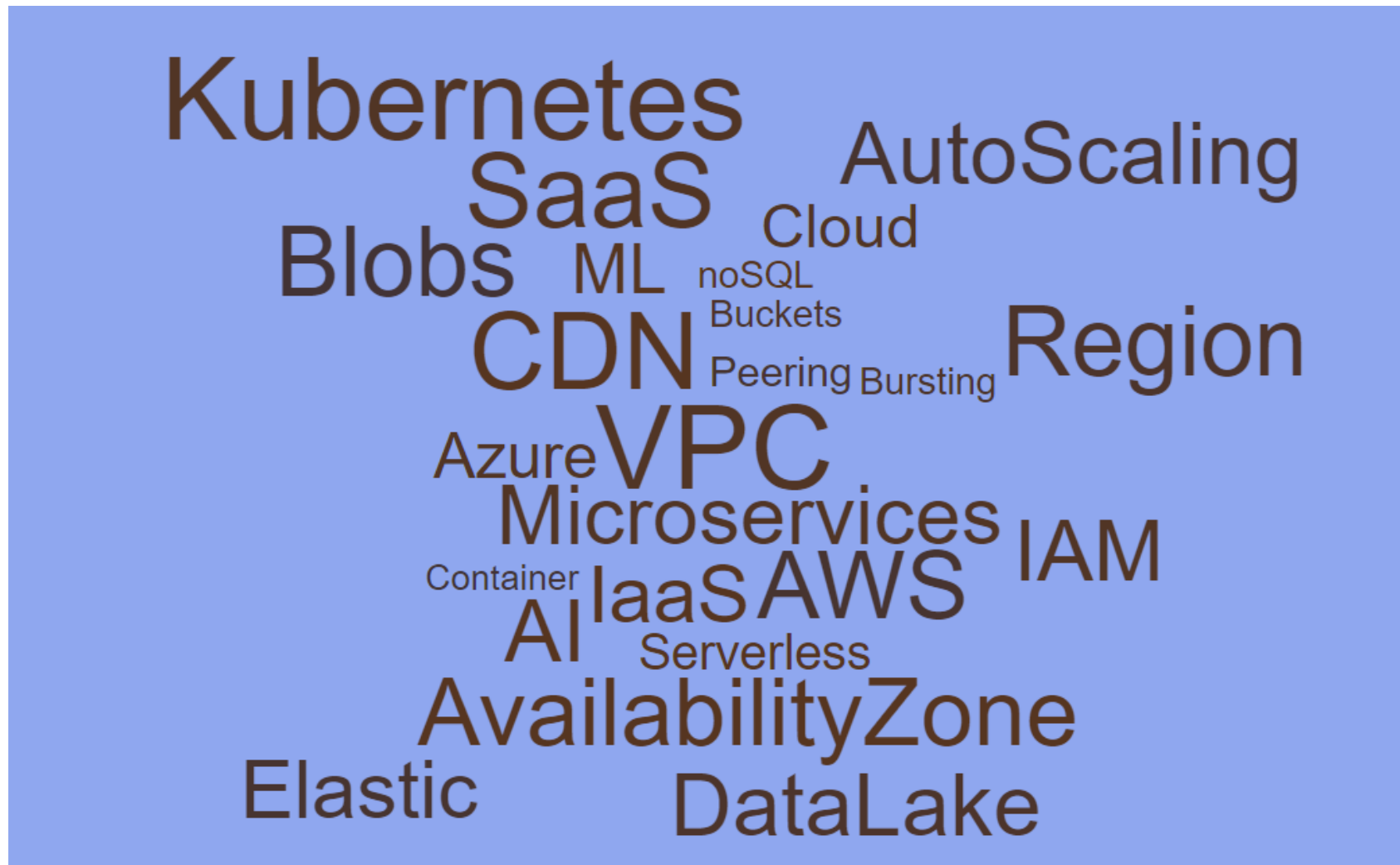
- New Fangled Vocabulary
- Fun Facts
- Let's Decipher a Few Example Terms
- What if...





CLOUD AND CONTAINERS AND
OPEN SOURCE, OH MY!

WHAT LANGUAGE IS THAT?!?



DO YOU KNOW THESE FACTS?



How many servers does AWS (Amazon web services) have?

31 Regions, 99 Availability Zones, 450+ Edges, and over 3 million servers!



How often does Spotify update their software?

Software updates every 2 weeks, content every hour!

How does Netflix seamlessly stream worldwide?



Over 100,000 server instances optimized across regions, zones, and edges!



How many users are on Azure Active Directory?

700+ Million Users authenticating through the cloud worldwide!

What are the most used programming languages worldwide?

Indeed.com jobs

Java: 31,370

Python Programmer: 31,459

R Programming: 5,398

SAS Programming: 4,297

TOP 10	
Popular Programming Languages in 2020	
1	Python
2	JavaScript
3	Java
4	C#
5	C
6	C++
7	GO
8	R
9	Swift
10	PHP

CLOUD

CLOUD DEFINITION

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What is cloud computing



Cloud computing refers to the delivery of **computing services**, such as servers, storage, databases, software, and networking, **over the internet**. In other words, instead of relying on local servers or personal devices to store and process data, cloud computing uses remote servers hosted on the internet to store, manage, and process data.

Cloud computing allows users to access computing resources **on demand and pay only for** what they use. This means that businesses and individuals can **scale** their computing needs up or down depending on their requirements, without having to invest in expensive hardware and infrastructure.

WHY IS CLOUD IMPORTANT TO US?



Capabilities

- ✓ Delivering all computing resources over the internet
- ✓ Scalability, load balancing, and resilience
- ✓ On demand computing and self-service provisioning
- ✓ Robust security at multiple levels

Value

- ✓ Efficient and cost-effective use of computing resources
- ✓ Separation of storage and compute
- ✓ Legacy performance issues disappear and need for migration vanishes
- ✓ Leverage a range of programming tools/languages with your compute needs



CONTAINER

CONTAINER DEFINITION

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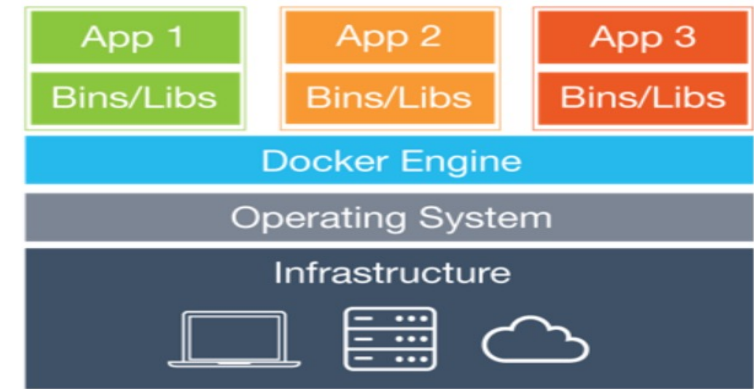
CH What is a container



A container is a **lightweight, standalone executable package** that contains everything needed to run a piece of software, including the code, runtime, system tools, libraries, and settings. Containers are often used to package applications and their dependencies into a **single deployable unit, which can be run consistently across different computing environments**, such as a developer's laptop, a test server, or a production cluster.

Containers are designed to be **portable, scalable, and isolated from the host system**, meaning that they can run on any operating system or cloud platform that supports containerization. Each container runs as a separate process on the host system, sharing the same kernel and resources, but with its own file system and network interface. This makes containers more lightweight and efficient than traditional virtual machines, which require a full operating system to be installed on each virtual instance.

WHY ARE CONTAINERS IMPORTANT TO US?



Capabilities

- ✓ Lightweight executable package of software
- ✓ Contains everything needed to run the application
- ✓ Automated load balancing and resilience
- ✓ Isolated from the underlying OS and Infrastructure

Value

- ✓ Rapid and automated deployment of new or updated tools and languages
- ✓ Separation of storage and compute leading to efficient and cost-effective use of computing resources
- ✓ Access to on demand compute resources when needed
- ✓ Accelerates innovation and experimentation of tools

OPEN SOURCE IS FREE!

Portability

Interoperability

Redistributable

Sharable

Open Source
Open Source

```
<variable name="name" type="ns0:am:request"/>
<copy>
<from>sxxf:current
<to>$namesp.msgReqOutput/ns0:am:request
</copy>
<invoke name="SystemLegacy">
<invoke name="Enterprise application">
<invoke name="SystemDatabase">
<fault handlers>
<catch faultName="ns0:selectionFailure">
<sequence name="seqErrSelection">
<assign name="txErrSelection">
```

OPEN-SOURCE DEFINITION

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What is open source



Open source refers to a type of software development model where the source code of a software product is made publicly available for anyone to view, use, modify, and distribute. This means that the software's source code is open to inspection, modification, and enhancement by anyone, rather than being proprietary and controlled by a single company or individual.

Open source software is often developed in a collaborative, decentralized manner, where contributions are made by a community of developers, rather than a single organization. This allows for greater transparency, accountability, and innovation in the development process, as well as broader access to technology and knowledge.

Open source software is typically distributed under a license, which specifies the terms and conditions under which the software can be used, modified, and distributed. Some common open source licenses include the GNU General Public License (GPL), the Apache License, and the MIT License.

WHY IS OPEN SOURCE IMPORTANT TO US?



Advantages

- ✓ Expand your toolbox to include the right tool for the right task
- ✓ Broader vetting and contribution to open source technologies
- ✓ Fewer bugs and faster fixes
- ✓ Start small, find business value, and scale to meet needs
- ✓ Attract better talent from a broader resource pool

Myths

- ✓ Open source software is more/less secure than proprietary
- ✓ Many eyes makes for secure code
- ✓ Open Source coding is chaotic
- ✓ Anyone can contribute to the code so it's all bad
- ✓ Open source software means it's open for your organization to use
- ✓ Open Source is free and cheaper than commercial software

THE PAST, PRESENT AND FUTURE



THE PAST

Private fixed compute

Inflexible scalability and resilience

Monolithic enterprise software



THE PRESENT

Virtualized Machines

Minimal scalability

Distributed software and
exploring open-source



THE FUTURE

Hybrid cloud approach

Unlimited scalability and
resilience

Leveraging open-source



WHAT IF....

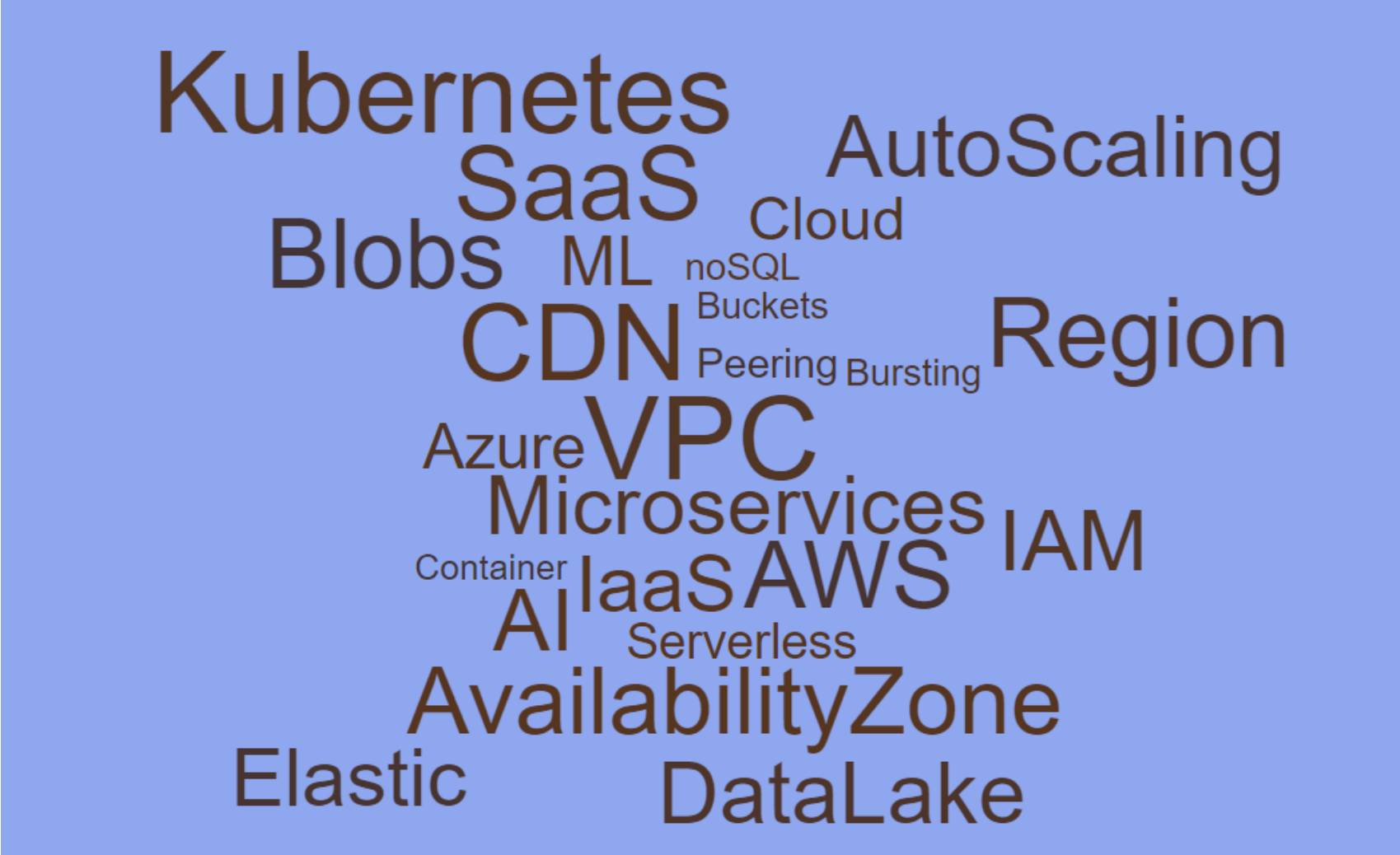
We could pick any tool, our compute needs, and the data and start doing our analysis in minutes

Our programming and analytics were self documenting, so we had 100% traceability and confidence in our results

We could ask chatGPT to generate 90% of our code or run ad-hoc analyses

What is your 'What If' question?

WHAT TERM ARE YOU GOING TO LEARN ABOUT?



A word cloud of cloud computing and DevOps terms on a blue background. The terms are arranged in a roughly circular pattern, with some terms being larger than others. The terms include:

- Kubernetes
- AutoScaling
- SaaS
- Cloud
- Blobs
- ML
- noSQL
- Buckets
- CDN
- Peering
- Bursting
- Region
- Azure
- VPC
- Microservices
- IAM
- Container
- AI
- IaaS
- AWS
- Serverless
- AvailabilityZone
- Elastic
- DataLake

QUESTIONS?

Chris Decker
VP. Clinical Solutions
Chris.Decker@Instem.com