Join Us in Making Learning Technology Easier

Our mission…

Over 16 years ago, we embarked on a journey to improve the world by making learning technology easy and accessible to everyone.

…impacts everyone daily.

And it's working. Today, we're known for delivering customized tech learning programs that drive innovation and transform organizations.

In fact, when you talk on the phone, watch a movie, connect with friends on social media, drive a car, fly on a plane, shop online, and order a latte with your mobile app, you are experiencing the impact of our solutions.

Over The Past Few Decades, We've Provided

Over **62,300,000** expert-led learning hours

In 2019 Alone, We Provided

Training to over **13,500** engineers

Programs in **30** countries

Over **120** active trainers, with an average of over two decades of experience each.

World Class Practitioners

250 best selling books authored

150 speaking engagements at industry conferences

9+ years of training experience

Over 17 years of industry experience per instructor

Over 62 million practitioner led training hours

125 certifications in leading technologies

95% instructor satisfaction

EXPERT PRACTITIONERS

SEASONED CONSULTANTS

ENGAGING INSTRUCTORS
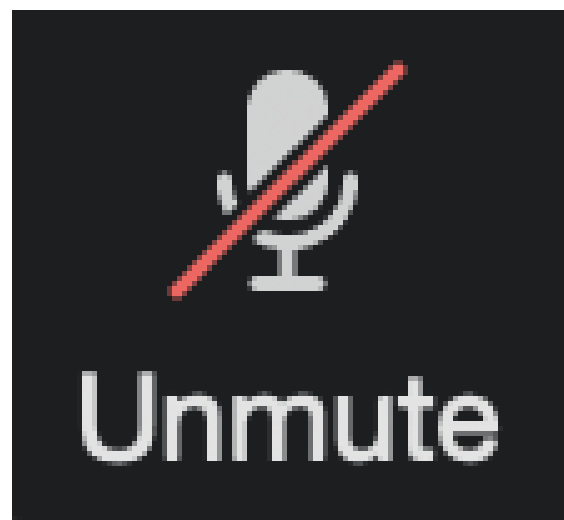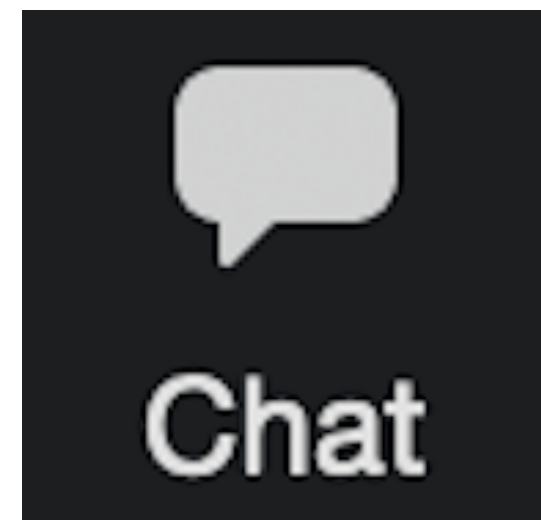
Develop Intelligence

Virtual Training Expectations for You

Arrive on time / return on time

Mute unless speaking

Use chat or ask questions verbally

Virtual Training Expectations for Me

I pledge to:
- ➢ Make this as interesting and interactive as possible
- ➢ Ask questions in order to stimulate discussion
- ➢ Use whatever resources I have at hand to explain the material
- ➢ Try my best to manage verbal responses so that everyone who wants to speak can do so

Quick review of key Zoom features that may be helpful for our course

Objectives

- Provide AVP & VP level management with the skills & knowledge they need to be more Cloud conversant both from a practical and strategic perspective
- Ultimate objective is for some participants to get certified as AWS Cloud Practitioners.

CLOUD FOUNDATIONS – PART 1

Achieve baseline understanding of Cloud and its role in accelerating digital transformation

- Why Cloud? Benefits & key features
- Options for deploying infrastructure in a Cloud-enabled world
- IaaS vs. PaaS vs. FaaS (Serverless) vs. SaaS
- How is Cloud accelerating digital transformation?
- Potential challenges

CLOUD FOUNDATIONS – PART 2

Achieve baseline understanding of Cloud and its role in accelerating digital transformation

- Monolith vs. microservices
- Microservices and containers overview
- Consumption model & efficiency metrics
- Cloud features, service models, and design
- Migration vs. modernization

CLOUD SERVICES

Examine service offerings available with the major Cloud Solution Providers (CSPs)

- Examine leading public Cloud platforms and compare their services
- Developing <u>for</u> Cloud
- Developing <u>on</u> Cloud
- Foundations of key public Cloud platforms
- Well Architected Frameworks for Cloud
- High-level survey of available AWS services
- Evaluate case studies - determining services to target for a Cloud project

Plan-of-Attack

CLOUD OPERATIONS

Examine key considerations associated to managing and operating Cloud

- Managing data and implementing analytics on Cloud

- Security & compliance

- Role of DevOps and DevSecOps in Cloud computing

- Cost management - CAPEX vs. OPEX

- Managing application & infrastructure performance in the Cloud

- Evaluate case studies - determining operational concerns for a Cloud project

CLOUD STRATEGY

Define Cloud strategy & lead client interactions on Cloud-based requirements

- Lead Cloud-based projects: planning, integrating and securing
- Elements of a Cloud strategy
- Cloud market landscape and trends
- Cloud provider selection
- Evaluate case studies - capturing Cloud computing requirements and moving the project forward
- Preparing for the AWS Cloud Practitioner exam

What is "the Cloud"?

How does "the Cloud" impact (or even enhance) our approach to business & technology enablement?

Infrastructure Options
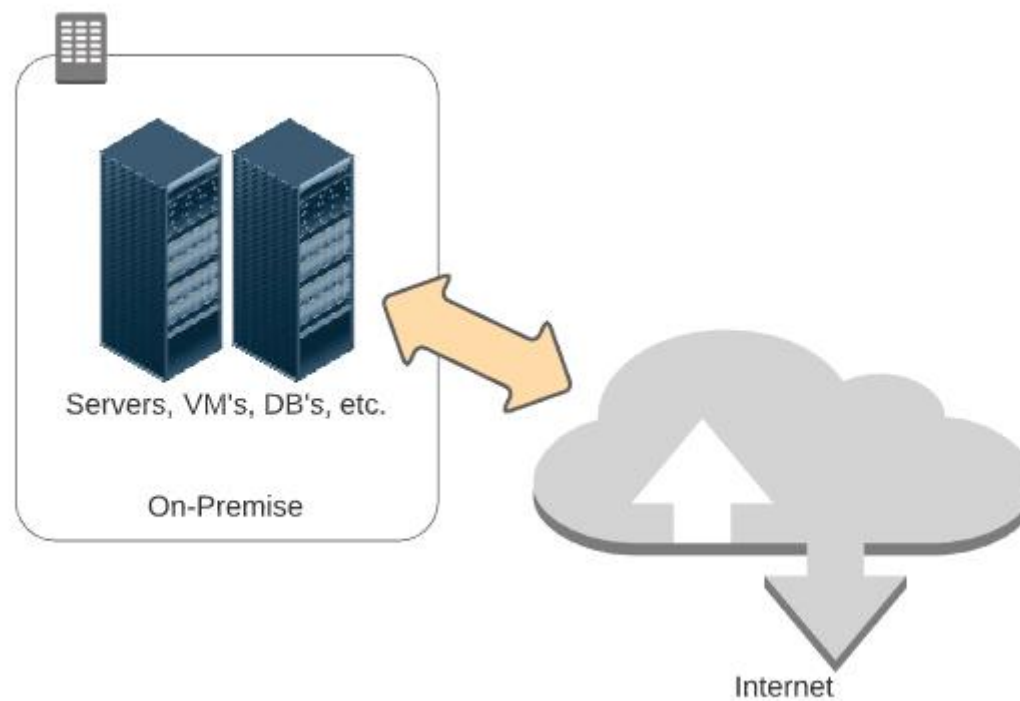
What Are the Options?

➤ On-Premise

➤ Public Cloud

➤ At the Edge

➤ Hybrid Cloud

What do they all mean?

Can mean a couple of different things:

➢ In a wholly-owned Data Center

➢ In a COLO (or co-location Data Center)

➢ Sometimes called a "private cloud"

Servers, VM's, DB's, etc.

On-Premise

Internet

Why and What?

➢ It's how infrastructure has traditionally been done

➢ With this model, companies try and estimate hardware capacity needed to support business operations

➢ Stakeholders look to plan out expected levels of consumption for the next 3 – 5 years (capacity to handle current volumes as well as expected growth)

➢ Some critical workloads may not be suitable for anything but a physical and directly-managed implementation (e.g. mainframe)

Pros?

➢ Discrete capacity planning (even if that planning was off)

➢ Some workloads (e.g., mainframes and certain legacy systems) are tailor-made for a physical data center

➢ With a move to COLO's, companies could begin to share expenditure

Cons?

➢ Sometimes difficult to know what is needed and when it is needed – if the plan was off (or unexpected spikes in demand occurred), difficult to adjust quickly

➢ Some workloads are just as effective (if not more so) in a virtual vs. physical implementation

➢ Harder to control costs and plan for costs – CAPEX vs. OPEX

Public Cloud
(AWS, Azure, GCP)
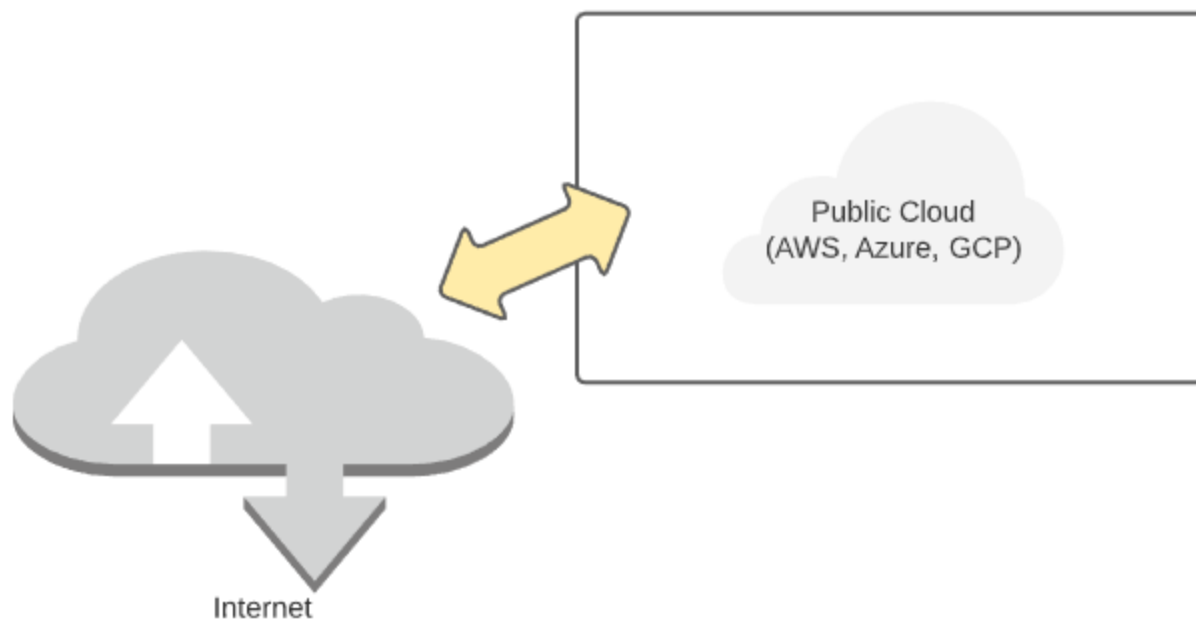
Internet

Why and What?

➢ Platform using the standard "Cloud computing model" to provide infrastructure and application services

➢ Accessed and integrated via the Internet

➢ May provide a few different types of services – IaaS, PaaS, etc.

➢ Usually supports a subscription or "pay as you go" (on-demand) pricing model

➢ Largest players in this space include Azure, AWS and GCP

Pros?

➢ Flexibility and elasticity in capacity planning – enables automated schedule-based or metrics-based adjustments to capacity when required

➢ In some cases, managed services can be leveraged reducing operations overhead

➢ Because services are PAYG (pay as you go), you're only charged for what you use, and those expenses are OPEX

Cons?

➢ Requires enough historical data for schedule-based planning or the right configuration for metrics-based planning

➢ With managed services you lose some levels of granular control

➢ Because of the flexibility/elasticity, it can be difficult to budget and, if Cloud services are not managed/monitored, costs can be high
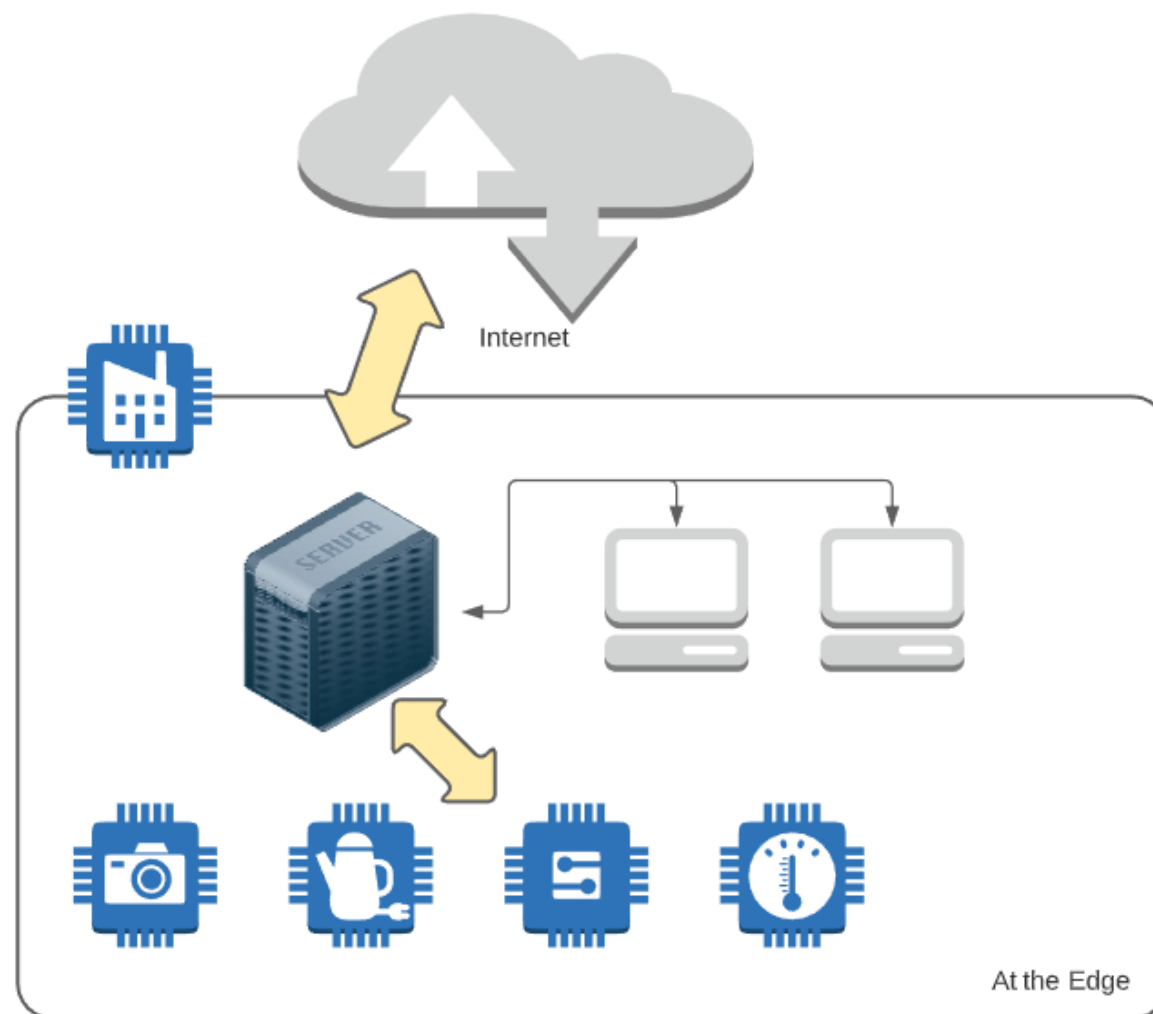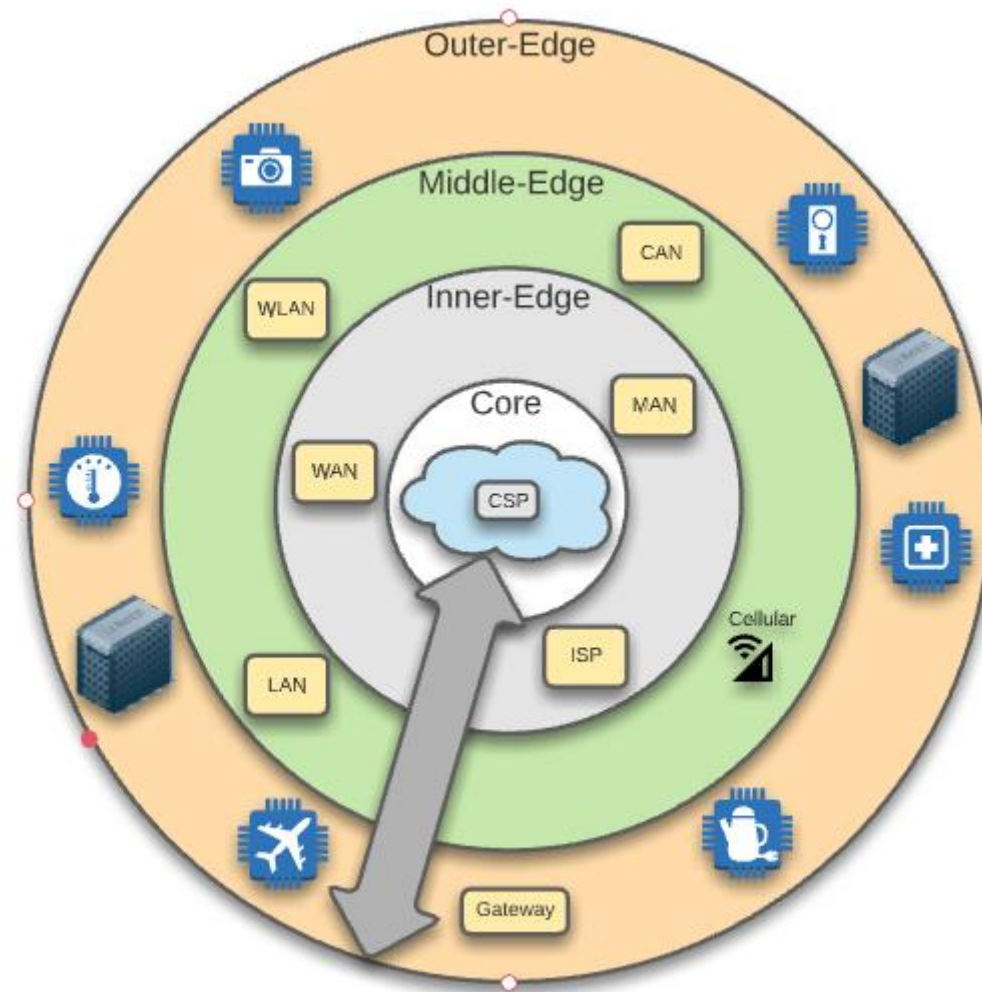
At the Edge

Can include three distinct layers:
➢ Inner or near edge
➢ Middle edge
➢ Outer or far edge

CSP – Cloud Service Provider
WAN – Wide Area Network
ISP – Internet Service Provider
MAN – Metropolitan Area Network
LAN – Local Area Network
WLAN – Wireless Local Area Network
CAN – Campus Area Network

Why and What?

➢ It's about bringing the power of Cloud computing to you

➢ Enables additional processing closer to the sources of data while still supporting the offload of higher order processing to the Cloud

➢ Often involves setting up "Cloud-in-a-box" facilities on-premise

➢ IoT (Internet of Things) is a good example – devices in a facility reading massive amounts of data can incorporate processing at the edge to improve overall efficiency

➢ Helps inject lower latency, increased security and improved bandwidth into systems used to aggregate critical data for an enterprise

Pros?

➢ Allows distribution of processing power across a larger surface area

➢ Can be used to bring critical latency, security and bandwidth improvements to specific types of business workflows

➢ Efficiencies gained "at the edge" can help with managing the cost of processing data

Cons?

➢ Requires more infrastructure and more configuration to support that distribution

➢ Increased distribution of processing power and activity can expand attack surface and requires the right configuration to ensure optimal interaction between system components (i.e., increased complexity)

➢ More components "at the edge" can lead to increased infrastructure costs

Hybrid Cloud

Why and What?

➢ In many ways, an amalgamation of the other options

➢ Supports distribution of system processing across on-premise infrastructure and the public Cloud

➢ Allows an enterprise to keep workloads that are best-suited for on-premise running on-premise while allowing migration of components that can move to the public Cloud

➢ Can help make an enterprise's move to the Cloud more gradual and planful

Pros?

➢ Allows distribution of processing power across a larger surface area

➢ Can allow a move to the Cloud to be more gradual and allow an enterprise to target optimal deployment platform while making the move

➢ The ability to support a gradual move enables an enterprise to assess and understand Cloud costs over time

Cons?

➢ Requires more infrastructure and more configuration to support that distribution

➢ As with Edge, can lead to increased complexity, often including required setup and maintenance of dedicated, secure connectivity between a data center and the Cloud

➢ If not managed optimally, costs can be higher due to need to pay for Cloud usage and data center (CAPEX + OPEX)
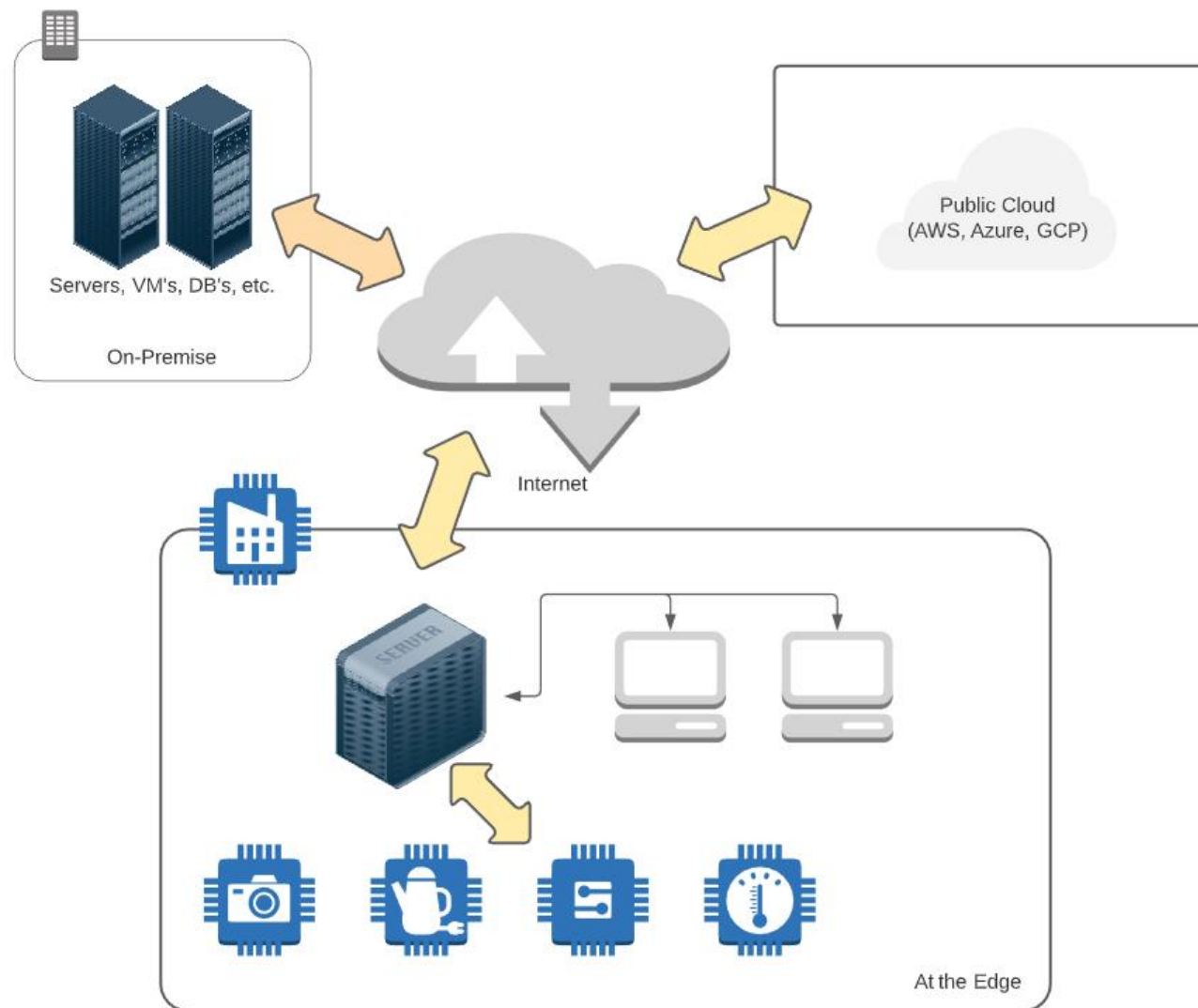
What Do We Mean by Hosting?

➢ The target infrastructure and runtime platform that will be employed for deployment and execution of an application or system

➢ Can include compute (CPU and server resources), storage, network, data and operating system

What Are the Hosting Options with Cloud?

- IaaS

- PaaS

- Serverless / FaaS

- SaaS

What do they all mean?

Infrastructure-as-a-Service (IaaS)

- Involves the building out (and management) of virtual instances of:
  - Compute
  - Network
  - Storage

- Akin to spinning up a server (physical or virtual) in your location or data center complete with disks and required network connectivity

- The difference is in the where – instead of in your data center, it is created in a data center managed by one of the public Cloud providers

- Your organization is responsible for patching the OS, ensuring all appropriate security updates are applied and that the right controls are in place to govern interaction between this set of components and other infrastructure

Platform-as-a-Service (PaaS)

➢ Involves leveraging managed services from a public Cloud provider

➢ With this model, an enterprise can focus on management of their application and data vs. focusing on management of the underlying infrastructure

➢ Patching and security of the infrastructure used to back the managed services falls to the CSP (Cloud Service Provider)

➢ Many managed services support automatic scale up or down depending on demand to help ensure sufficient capacity is in place

➢ Part of what is often termed the "Shared Responsibility Model"

➢ Also represents a type of managed service provided by the CSP

➢ Cost structure is usually consumption-based (i.e. you only pay for what you use)

➢ Supports many different coding paradigms (C#/.NET, NodeJS, Python, etc.)

➢ Typically, with Serverless (and PaaS), the consumer is only concerned with the application code and data – elements of the CSP's "backbone" used to support are managed by the CSP

➢ Includes more sophisticated automated scaling capabilities – built for Internet scale
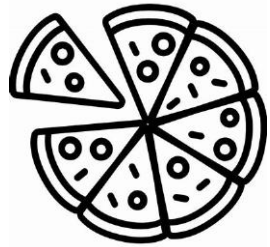
Software-as-a-Service (SaaS)
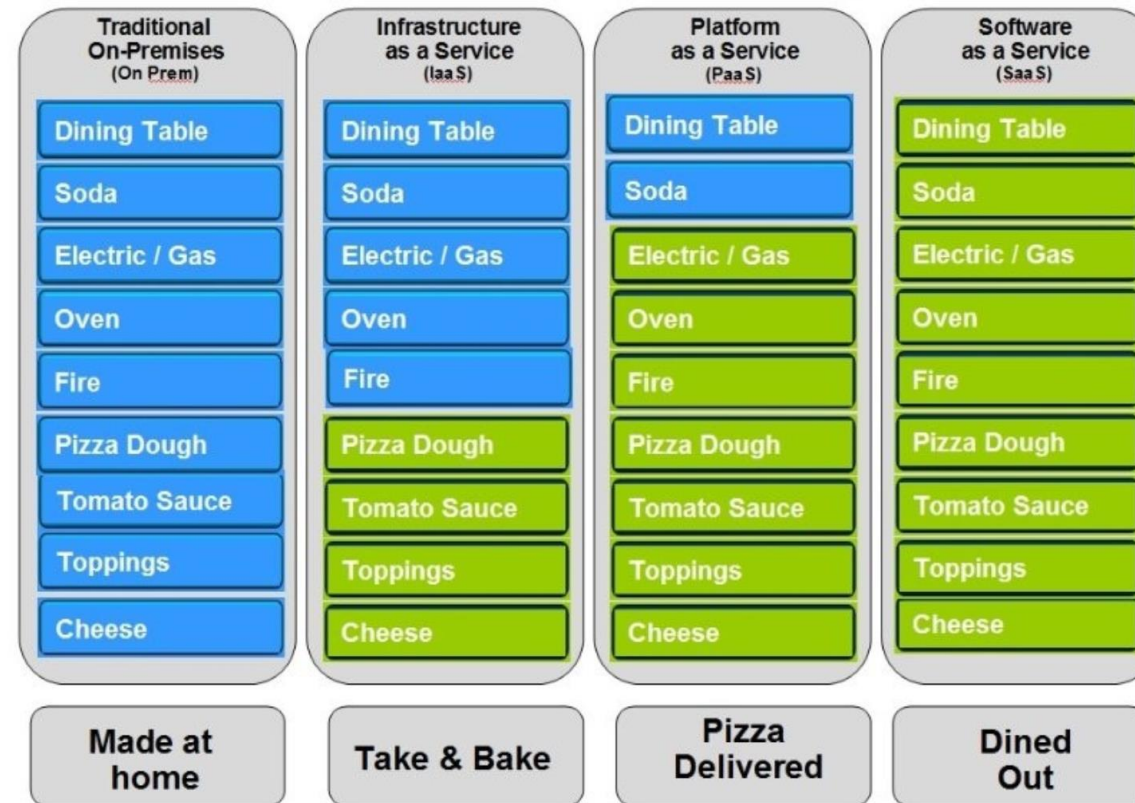
- ➢ Subscription-based application services

- ➢ Licensed for utilization over the Internet / online rather than for download and install on a server or client machine

- ➢ Fully-hosted and fully-managed by a 3rd party

- ➢ Of those discussed, often the cheapest option for service consumers

- ➢ However, also offers minimal (or no) control, outside of exposed configuration capabilities
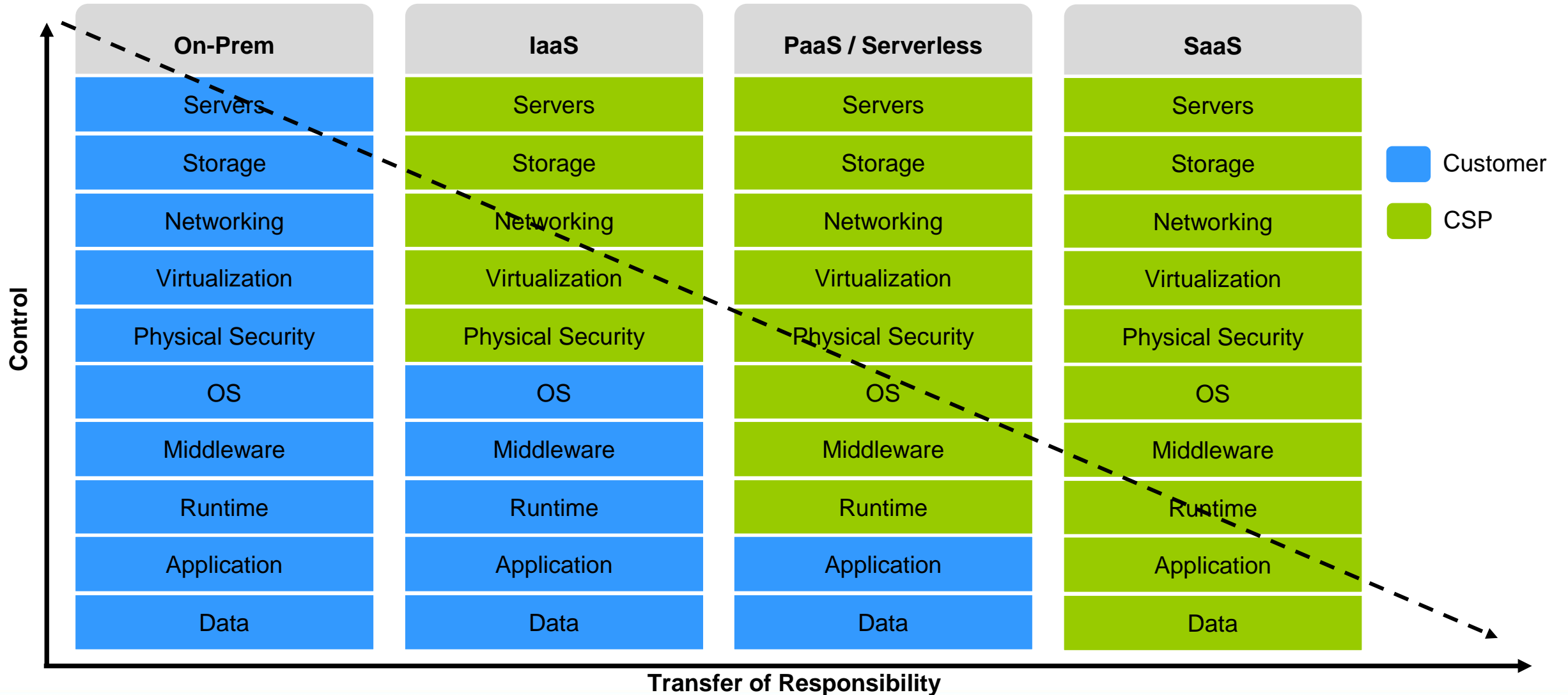
From a LinkedIn post by Albert Barron from IBM (https://www.linkedin.com/pulse/20140730172610-9679881-pizza-as-a-service/)

Side-by-Side Comparison

On-Prem	IaaS	PaaS / Serverless	SaaS
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking
Virtualization	Virtualization	Virtualization	Virtualization
Physical Security	Physical Security	Physical Security	Physical Security
OS	OS	OS	OS
Middleware	Middleware	Middleware	Middleware
Runtime	Runtime	Runtime	Runtime
Application	Application	Application	Application
Data	Data	Data	Data

Control

Transfer of Responsibility

Customer

CSP

Which One is Better?

➢ The answer is "it depends"

➢ It depends on the type of application

➢ It depends on the enterprise

➢ It depends on the skillset and expertise within the organization

➢ It depends on whether you have budget and opportunity to modernize an application environment (in some cases)

➢ The best option might be a combination of multiple approaches – right tool for the right job

Demo

What is digital transformation?

Digital transformation is the integration of digital technology into all areas of a business, fundamentally changing how you operate and deliver value to customers. It's also a cultural change that requires organizations to continually challenge the status quo, experiment, and get comfortable with failure.

https://enterprisersproject.com/what-is-digital-transformation

What is it?

"...the integration of digital technology into all areas of a business..."

➢ Automate in new ways

➢ Driven by the business

➢ Look for opportunities everywhere

What is it?

"…fundamentally changing how you operate and deliver value to customers…"

➢ Depending on client, change may be significant

➢ Maximize efficiency & innovation while optimizing costs

➢ Look for both internal and external opportunities to transform

What is it?

"…a cultural change…continually challenge the status quo, experiment, and get comfortable with failure…"

➢ Requires a different way of thinking about business problems

➢ In alignment with DevOps principles

➢ People, process, & technology that enables innovation and "fail fast"

https://itrevolution.com/the-three-ways-principles-underpinning-devops/

How does Cloud enable?

"…the integration of digital technology into all areas of a business…"

➢ Multiple Cloud services available to support

➢ Cloud offers multiple options for architecting a business-driven solution

➢ Supports global reach and elastic scale

"…fundamentally changing how you operate and deliver value to customers…"

➢ Let's you think outside of the "data center" box

➢ Can open new technology and capability doors

➢ There is no standing still – only forward or backward

How does Cloud enable?

"…a cultural change…continually challenge the status quo, experiment, and get comfortable with failure…"

➤ Agility provided by the Cloud enables speed

➤ Cloud supports "automate everywhere" – key principle of DevOps

➤ Can help make trying new things the "new normal"

Potential Challenges

➢ New paradigm – potentially even a tectonic shift

➢ Multiple options – CSPs & services…How do you choose?

➢ With the wrong architecture or approach, anticipated cost savings can vanish