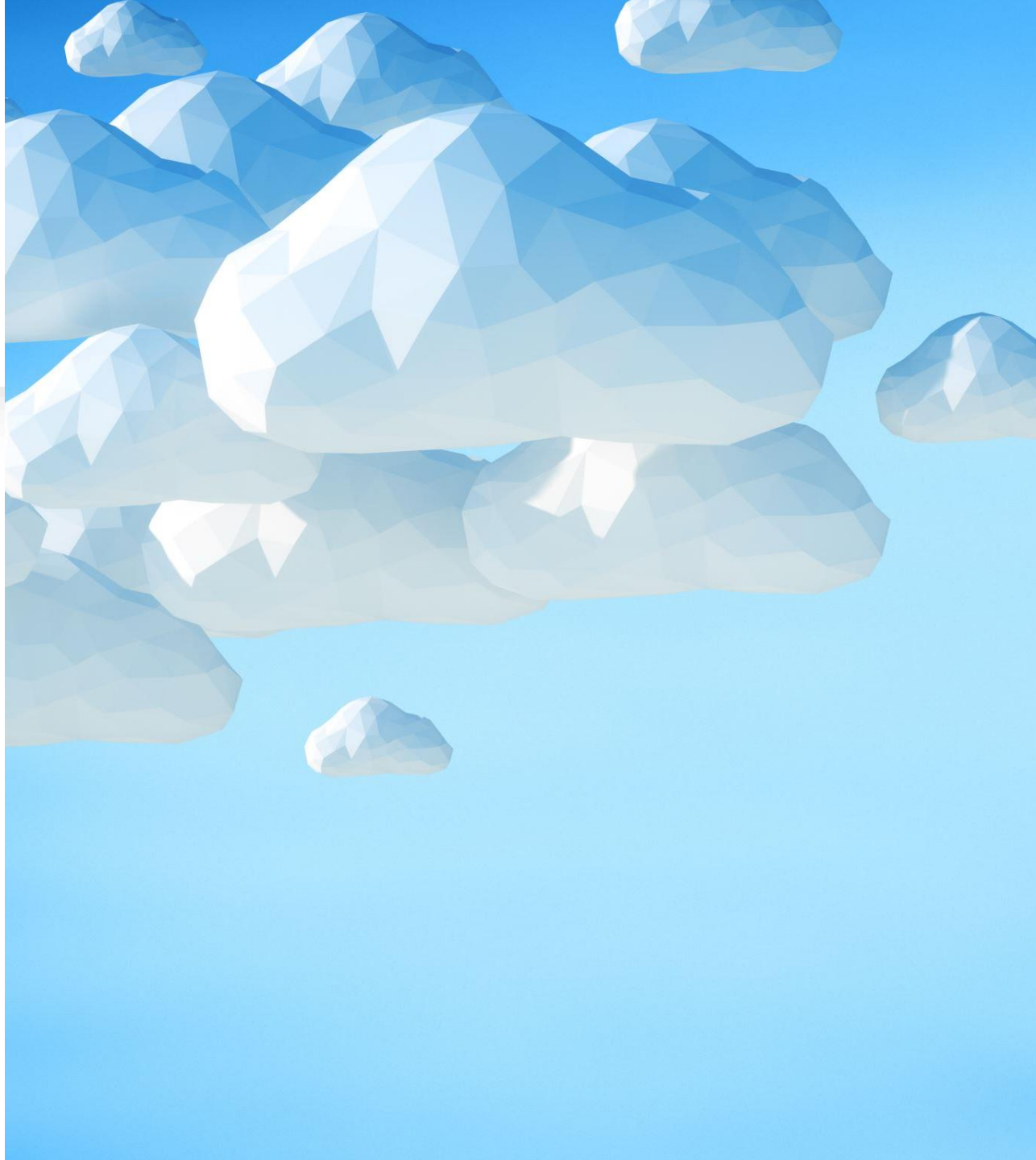
Goals

- Understand the reasons why hosting PostgreSQL in the cloud may be useful
- Learn about the difference between various cloud vendor offerings
- Know the possible challenges that cloud-based hosting introduces



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Grant Fritchey

DevOps Advocate

Microsoft PostgreSQL MVP
AWS Community Builder

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Why PostgreSQL in the Cloud?

Why PostgreSQL in the Cloud?

The Cloud =
Someone Else's Server

But First…

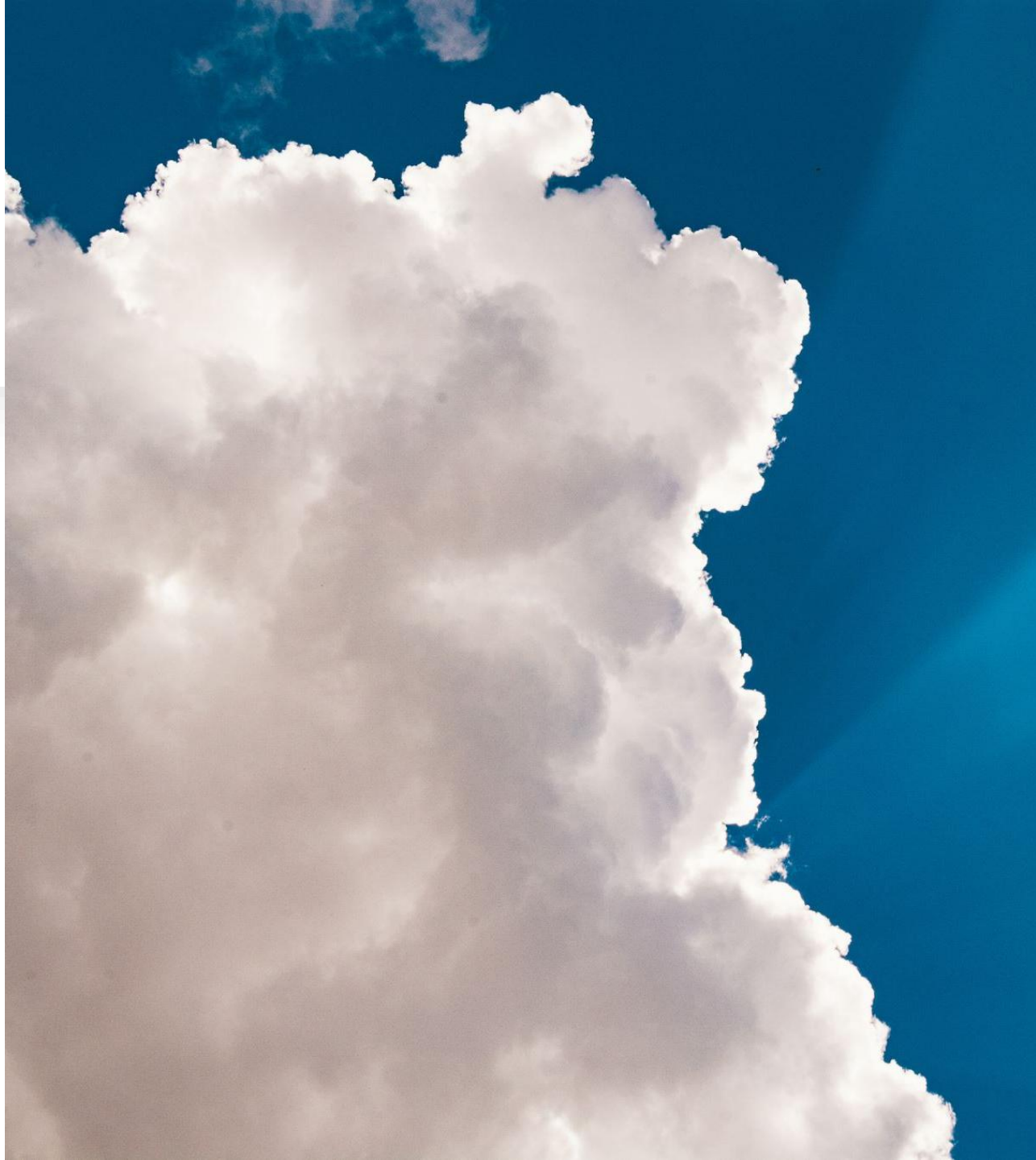
Infrastructure as a Service (AKA Virtual Machines, IaaS or IAAS)

Containers (Kubernetes, everybody drinks)

Platform as a Service (PaaS or PAAS)

Why PostgreSQL in the Cloud?

- Cost
- Capability



Cost of ~~the Cloud~~ On Premises

Servers

Data centers

Electricity

Personnel

HA/DR

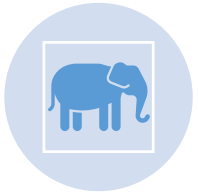
TIME!

Capability

Knowledge of (see previous slide)

Security

Unique value



PostgreSQL

TIME!

Cloud Advantages

- Scale
- Security
- Knowledge
- SPEED!

Cloud Disadvantages

- Someone else's server
- No OS internals
- Limits on PostgreSQL Extensions
- Bandwidth
- Cost (TANSTAAFL)
- KNOWLEDGE!


Cloud Vendor Offerings

The Big 3 (in alphabetical order)

Amazon Web Services
(AWS)

Google Cloud Platform
(GCP)

Microsoft Azure
(Azure)

Anyone EXCEPT Them

- IBM Cloud (yeah, who knew)
- Heroku
- EnterpriseDB
- Rackspace
- Kamatera
- Vultr
- DigitalOcean
- Linode
- OVHcloud


Meanwhile, back at the ranch…

Common to Big Three Cloud Providers

- No OS
- Defined SLA
- Backups are handled
- Integrity is handled
- Internals are up to you
- Some level of HA/DR built in
- Limitations on extensions
- Data is encrypted at rest and in motion

AWS RDS PostgreSQL

- PostgreSQL versions 9.6 – 16
- Secured through Amazon Virtual Private Cloud
- Secondary availability zones and read only secondaries

AWS Aurora PostgreSQL

- Maintained fork of PostgreSQL
- Versions supported: 12.18, 13.14, 14.11, 15.6, 16.2
- Mostly the same as RDS
- Automatically in three (3) availability zones at no added cost
- Enhanced I/O

GCP CloudSQL for PostgreSQL

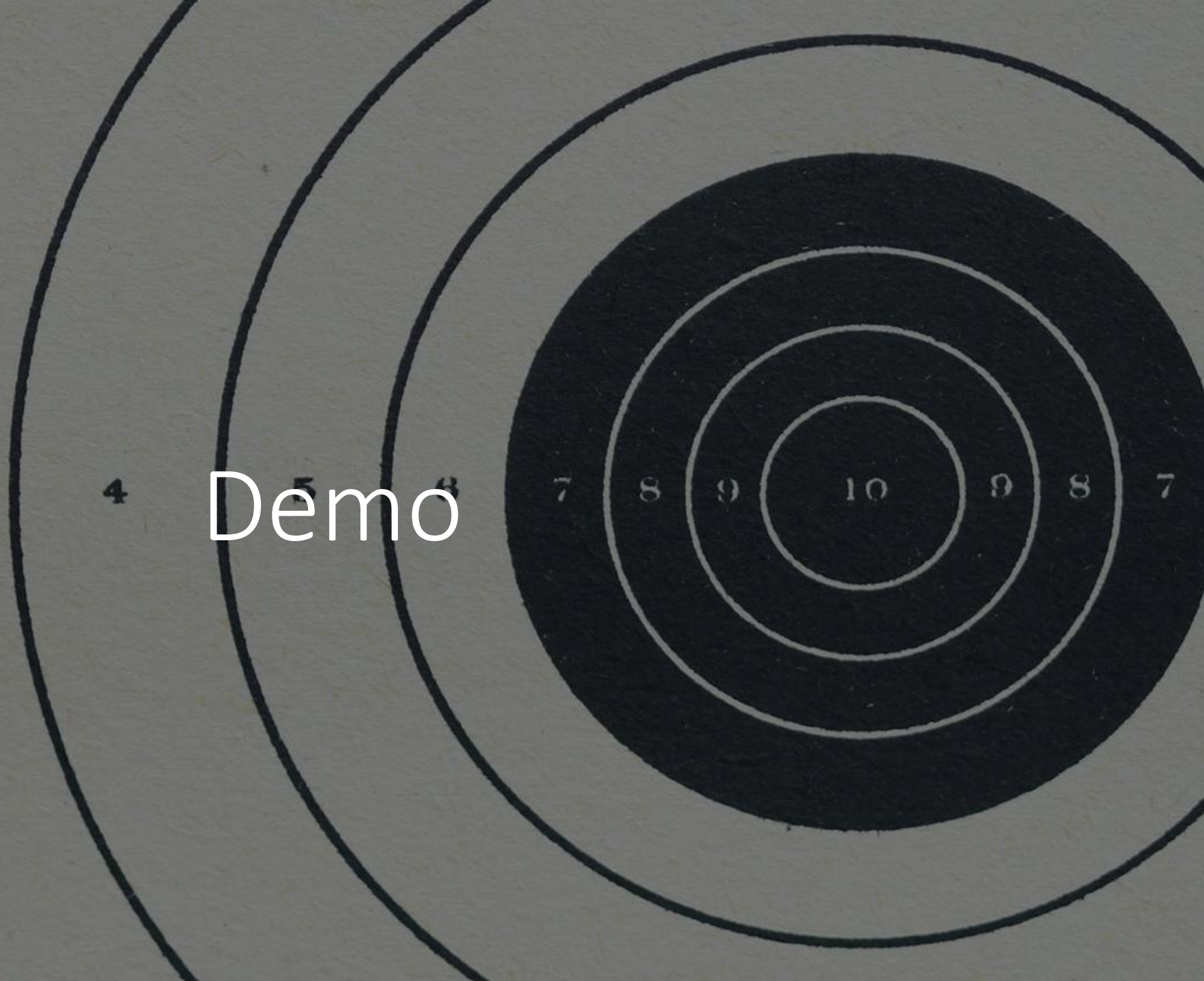
- Versions 9.6 – 15 of PostgreSQL
- Replication with failover is supported
- Query monitoring
- Explain plans available

GCP AlloyDB for PostgreSQL

- Maintained fork of PostgreSQL
- Key word, “Compatible”
- Available both in the cloud and on-prem
- Actually a cluster of Virtual Machines

Azure Database for PostgreSQL

- Supports versions 11 – 16
- Customized extensions
- Query Store
- Multiple levels of security including Kerberos
- Additional HA/DR scenarios available
- Readable secondaries



Demo

It was a dark and stormy night…


Sunshine and Rainbows

Further Reading

- DevRemote - 10 Best PostgreSQL Cloud Providers
- SeveralNines – Comparing Cloud Database Offersings for PostgreSQL
- AWS RDS & Aurora Documentation
- GCP Cloud SQL Documentation
- Azure Database for PostgreSQL Dcoumentation
- Learning PostgreSQL with Grant

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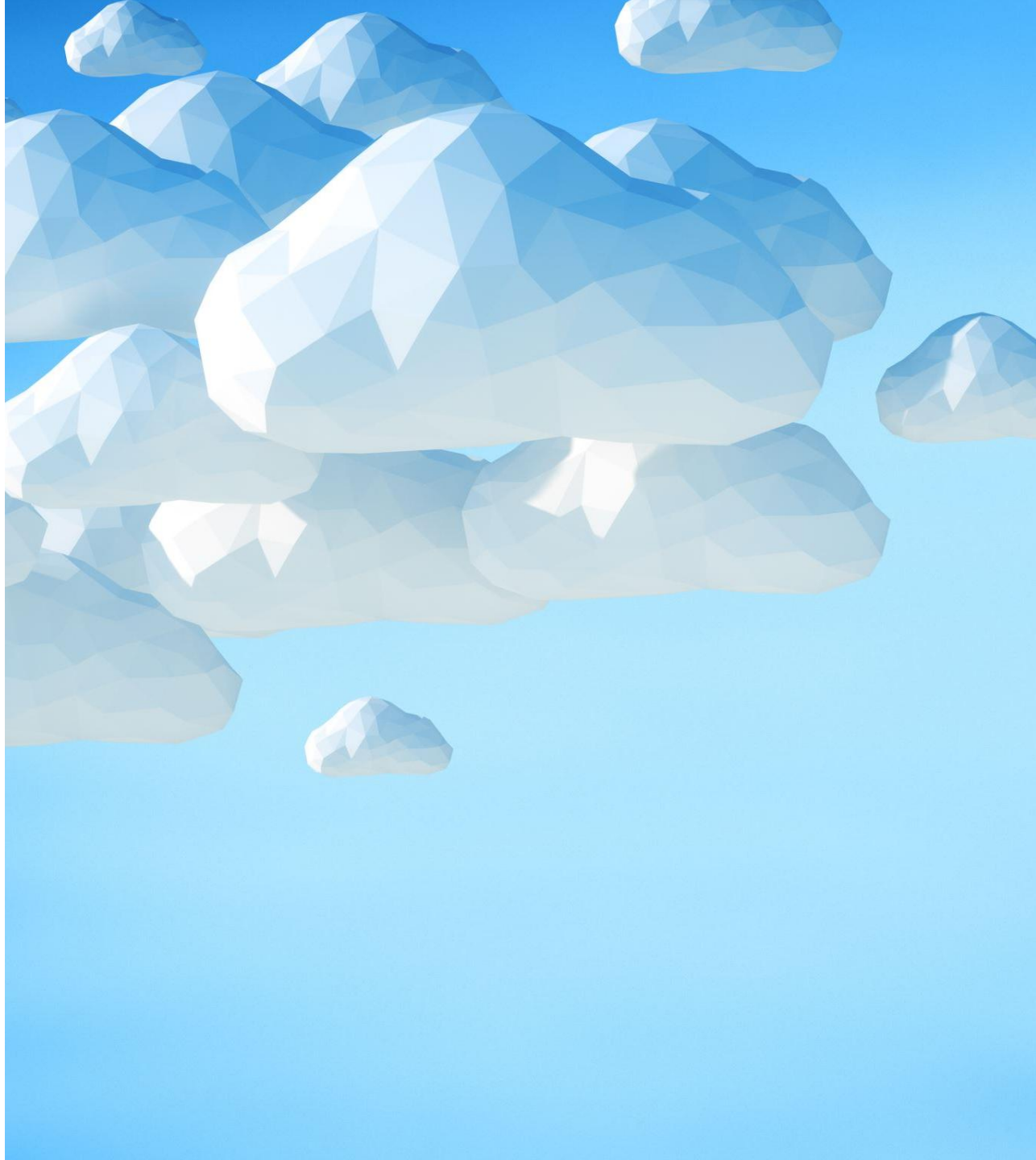

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Questions?