Big Data Workloads on Kubernetes

intro

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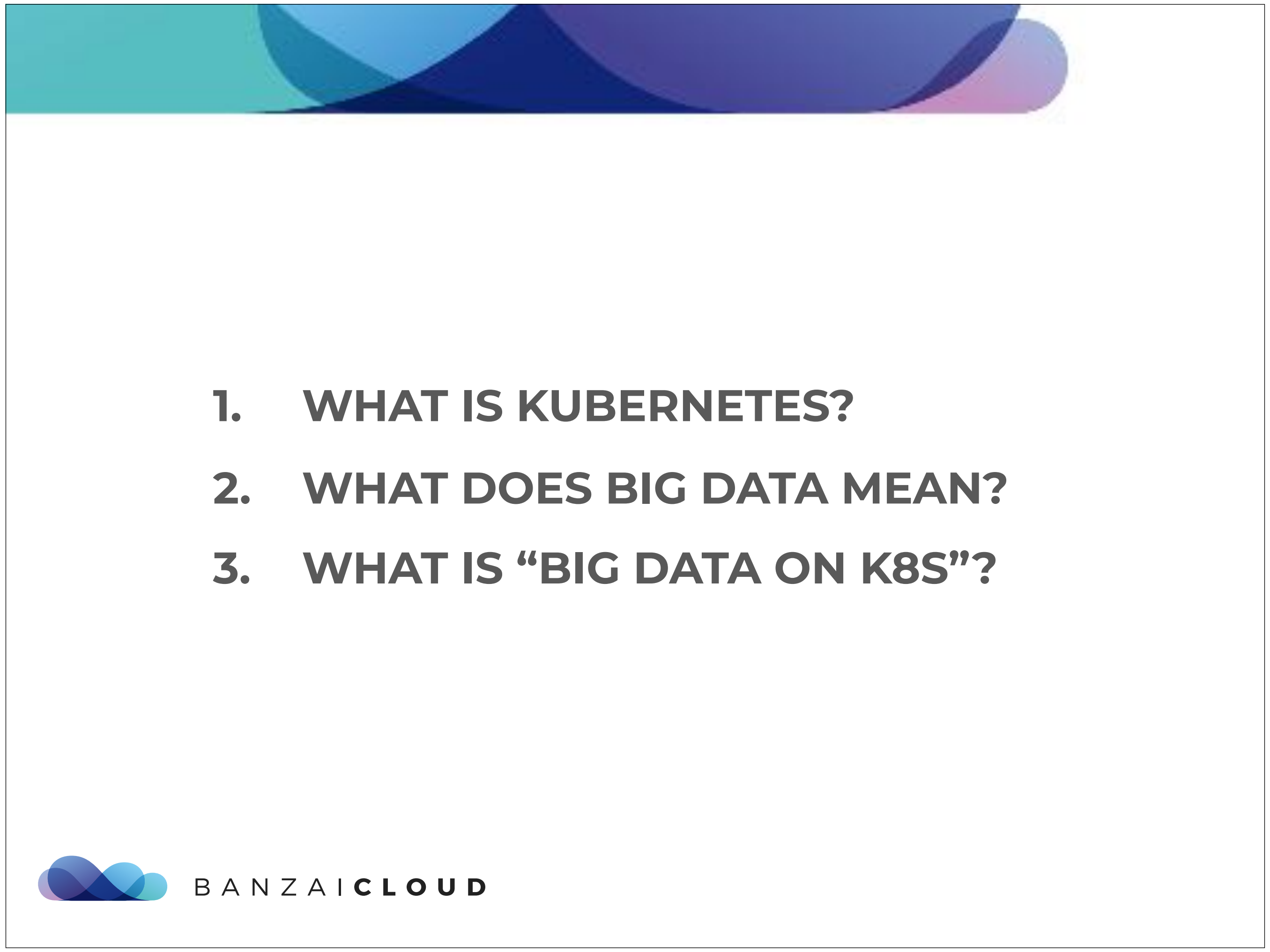

1. WHAT IS KUBERNETES?
2. WHAT DOES BIG DATA MEAN?
3. WHAT IS “BIG DATA ON K8S”?

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1. Q? Container orchestration - deployment, scaling, management of containers / good community / becomes a standard / CNCF landscape - standards, working groups for CNI, serverless events,
2. Hadoop ecosystem / Spark (data processing) / Zeppelin (notebook) / Kafka (distributed streaming, messaging) - why these? Most popular, not attached too tightly to core hadoop/yarn Q?
3. Running Spark, Zeppelin and Kafka natively on k8s, without any unnecessary “glue”

WHY IS IT GOOD TO RUN THESE WORKLOADS ON K8S?

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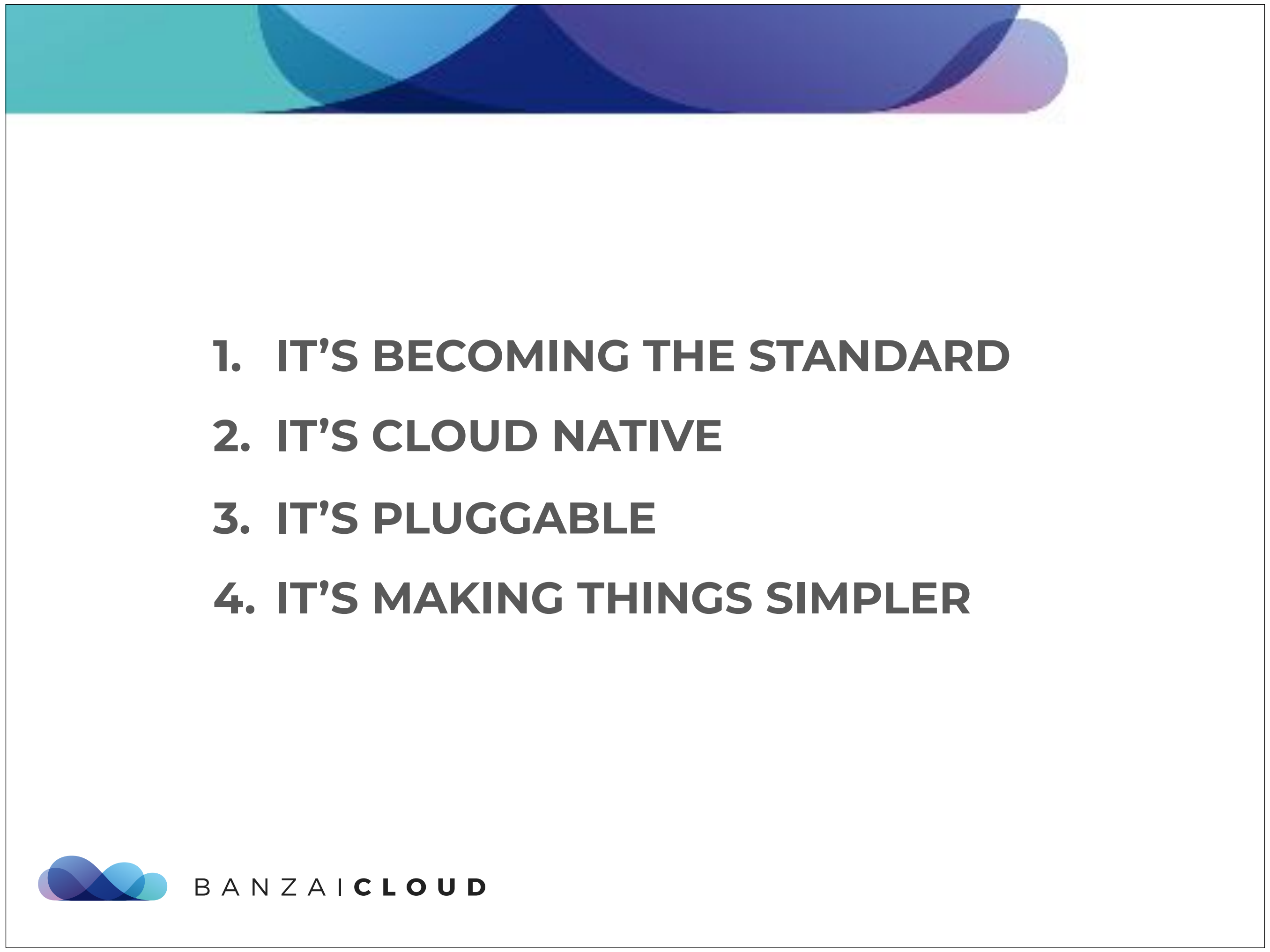
Main question
See next slide



1. **IT’S BECOMING THE STANDARD**
2. **IT’S CLOUD NATIVE**
3. **IT’S PLUGGABLE**
4. **IT’S MAKING THINGS SIMPLER**

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1. Not a technical advantage / companies need containers and therefore orchestration systems / kubernetes is becoming the de-facto standard / they will use it anyway / use it for big data - only one kind of infrastructure to manage
2. Designed from the ground up with cloud (resiliency, service-discovery, hybrid, multi-tenant, upgrades, isolation, unified interfaces) in mind / standards for containerd, CNI, container storage interface, grpc / the CNCF landscape / monitoring (prevention, downtime, cost - Prometheus), logging (unified, collect - Fluentbit/d), service mesh (reliability, security, monitoring, canary testing - Istio, Conduit)
3. The model is turned upside down - cloud providers need to add their extensions for persistent volumes, autoscaling vs ambari/yarn/cloudbreak), / custom schedulers / custom resources (e.g. Spark)
4. Yarn - not needed, kubernetes scheduler is fine / Zookeeper - not needed, etcd is working just fine / Twitter Heron - vs Storm / infrastructure code is separated from app logic

CHALLENGES?

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Existing projects need code modifications - Still the beginning of the road
Data locality, external storage
Managing state - stateful sets, cloud object store (Ozone vs Minio,Rook), container storage interface,
logging, monitoring, etc still need to be set up properly
Optimized schedulers - heron - own scheduler (multiple schedulers can run as well)
Legacy vendors
Mindset - open source community

Thank you
Q & A

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