KEDA: SCALING IDENTITY MANAGEMENT EFFORTLESSLY

WHY KEDA?

- Event-Driven Autoscaling
- Support for Multiple Event Sources
- Integration with Cloud Native Serverless Workloads
- Horizontal Pod Scaling
- Fine-Grained Control

WHAT IS KEDA?

- Kubernetes Event-Driven Autoscaling (KEDA) is an open-source project that provides event-driven autoscaling for Kubernetes workloads.

- KEDA extends Kubernetes to enable it to handle event-driven scaling of workloads. Traditional Kubernetes only provides autoscaling based on CPU and memory consumption through the Horizontal Pod Autoscaler.

WHAT IS HPA ?

Horizontal Pod Autoscaler (HPA) is a Kubernetes feature that automatically adjusts the number of pods in a deployment, replica set, or replication controller based on observed CPU utilization (or, with custom metrics support, on some other application-provided metrics).

- Metric Monitoring
- Target Resource Utilization
- Pod Scaling
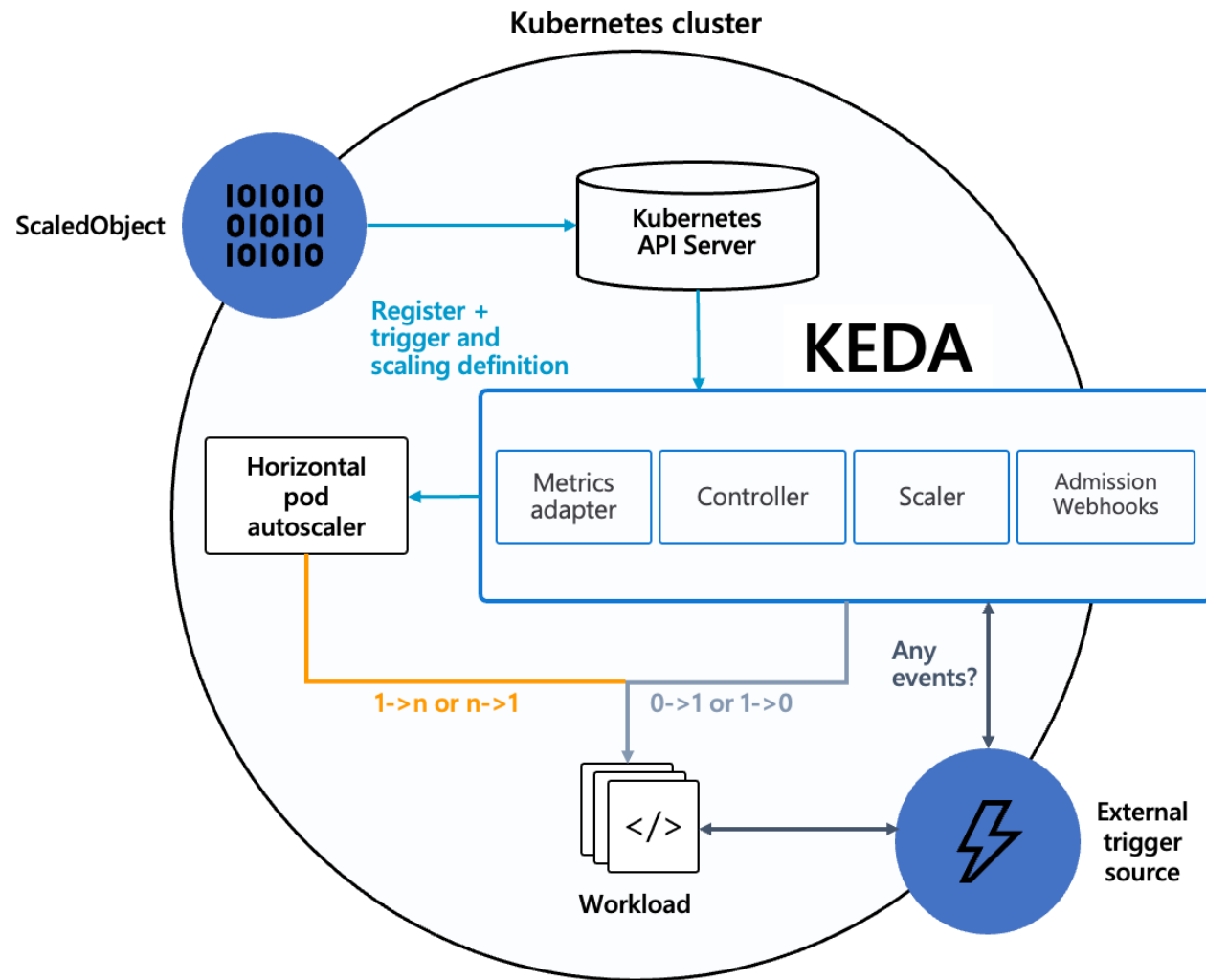
ARCHITECTURE OF KEDA

KUBE JOBS VS KEDA JOBS

AZURE AD WORKLOAD IDENTITY

Azure AD Workload Identity for Kubernetes integrates with the capabilities native to Kubernetes to federate with external identity providers

HOW AZURE AD WORKLOAD IDENTITY WORKS

- Kubernetes cluster becomes a token issuer, issuing tokens to Kubernetes Service Accounts. These service account tokens can be configured to be trusted on Azure AD applications or user-assigned managed identities.
- Workload can exchange a service account token projected to its volume for an Azure AD access token using the Azure Identity SDKs or the Microsoft Authentication Library (MSAL).

HOW AZURE AD WORKLOAD IDENTITY WORKS
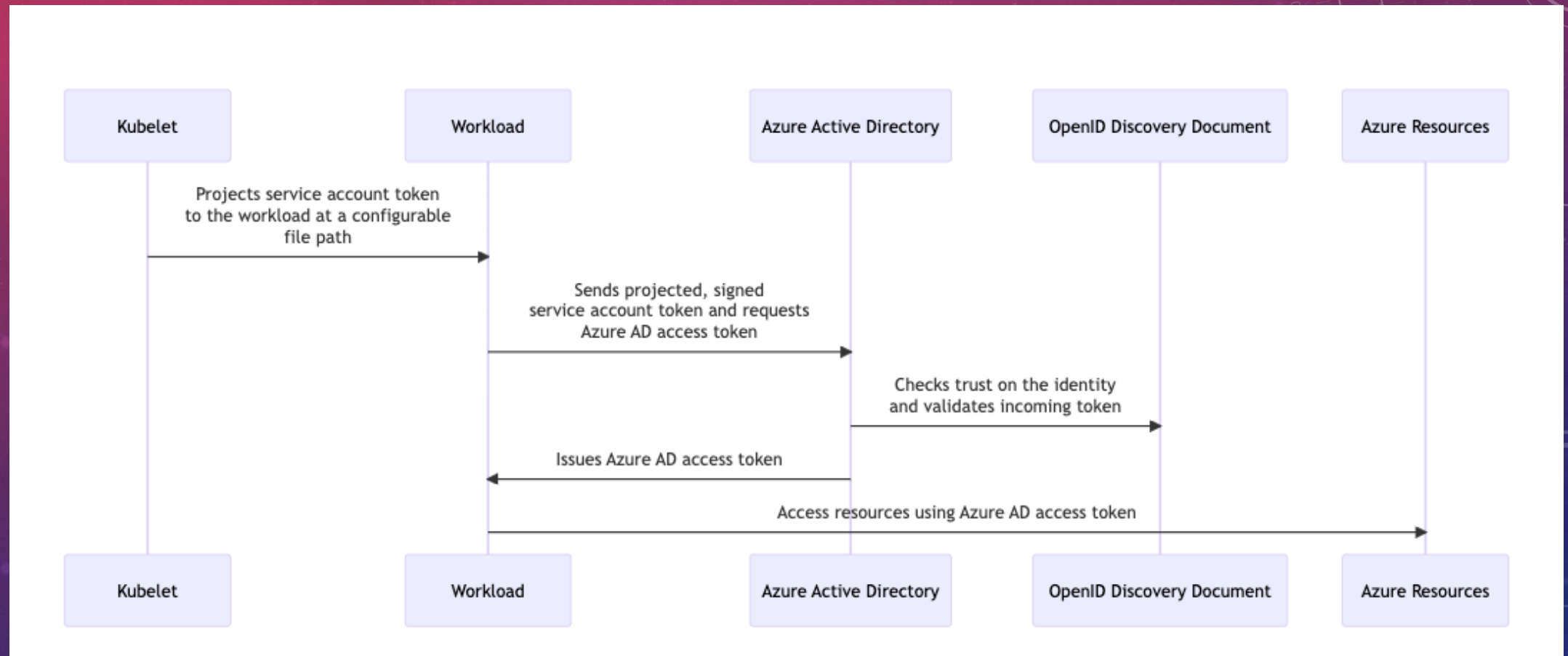
ENABLE AZURE AD WORKLOAD IDENTITY

```yaml
podIdentity:
  provider: azure-workload  # Optional. Default: none
  identityId: <identity-id> # Optional. Default: ClientId From annotation on service-ac
```
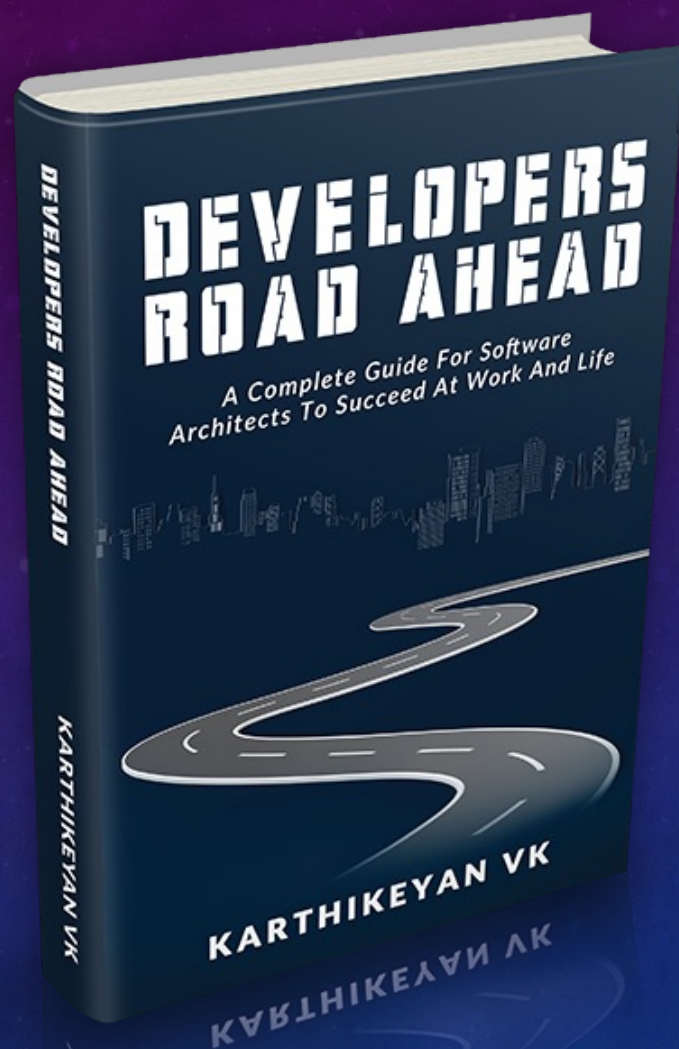
STEPS TO CONFIGURE WORKLOAD IDENTITY

✓ Enable any OIDC-specific feature flags

✓ Extract the OIDC issuer URL

✓ Mutating Admission Webhook

✓ Install Azure AD Workload Identity CLI - azwi

✓ Use azwi to establish federated identity credential between the identity and the service account issuer & subject

```
azwi serviceaccount create phase federated-identity \
    --aad-application-name "${APPLICATION_NAME}" \
    --service-account-namespace "${SERVICE_ACCOUNT_NAMESPACE}" \
    --service-account-name "${SERVICE_ACCOUNT_NAME}" \
    --service-account-issuer-url "${SERVICE_ACCOUNT_ISSUER}"
```

KEY TAKEAWAYS

- ✓ HPA has limitations
- ✓ KEDA Solves it
- ✓ Identity can be configured using azwi

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THANK YOU!