Microsoft Azure

Security In Plain Sight: Hardening Systems Via Open Source

Phillip Gibson, Microsoft

opensource.microsoft.com

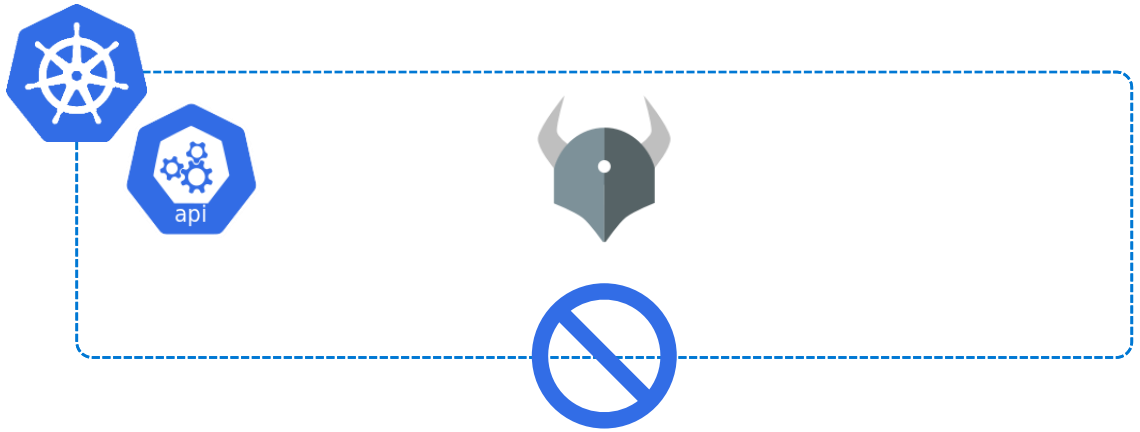
Security and compliance

- The safest code is independently verifiable while still customizable to the org's specific needs
- Industry-standard cloud native technologies are essential for security infrastructure
- Security and transparency go hand in hand
- Microsoft contributes much open source in the K8s security realm

Gatekeeper

Policy Controller for Kubernetes

- Built on Open Policy Agent
- Allows user-defined policy to ensure Kubernetes resources are compliance




```
apiVersion: v1
kind: Pod
metadata:
  name: label-demo
  labels:
    environment: production
    app: nginx
spec:
  containers:
  - name: nginx
    image: nginx:1.14.2
    ports:
    - containerPort: 80
```

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github.com/open-policy-agent/gatekeeper

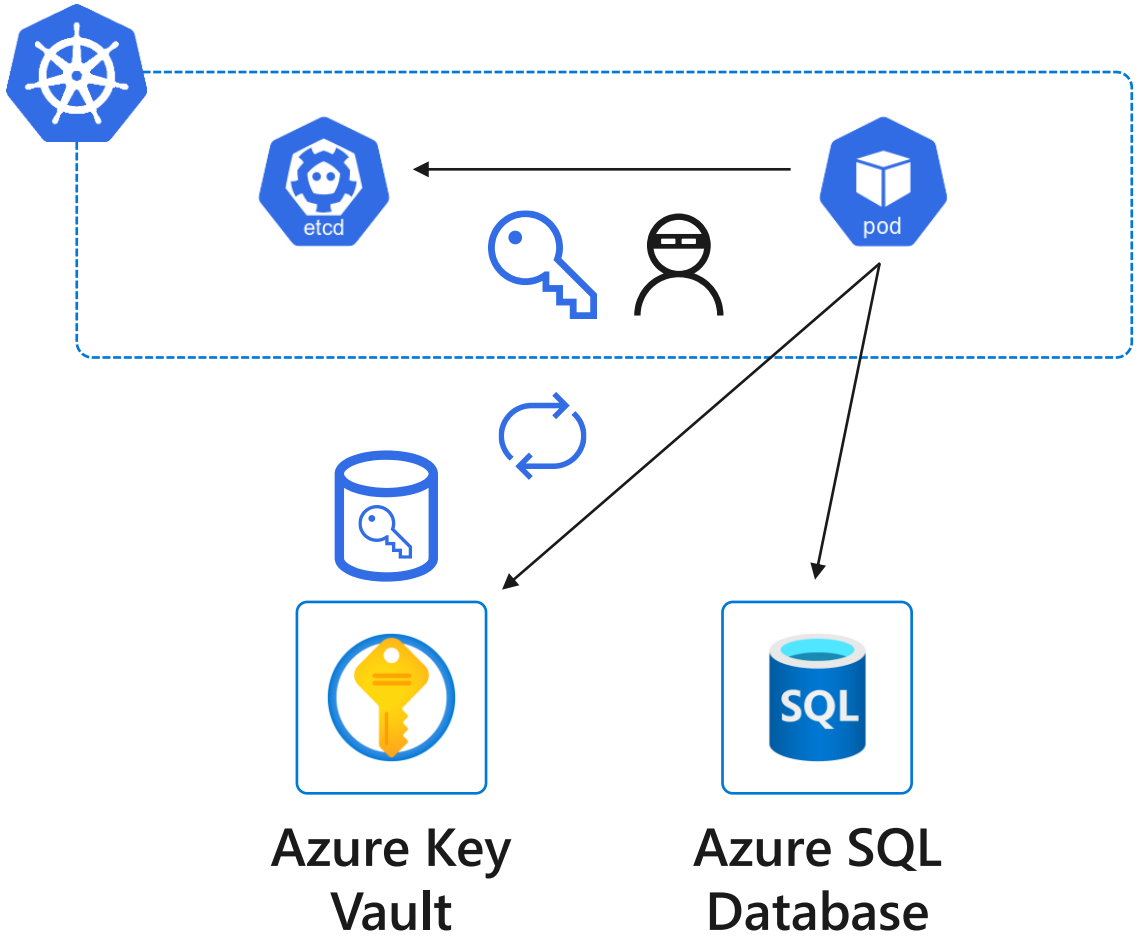
CSI Secrets Store

Integrates secrets stores with Kubernetes via a Container Storage Interface (CSI) volume

Azure Key Vault provider for Secrets Store CSI driver

- Get secret contents stored in Azure Key Vault, HashiCorp Vault, Google Cloud Key, and AWS KMS
- Use Secrets Store CSI driver to mount them into Kubernetes pods

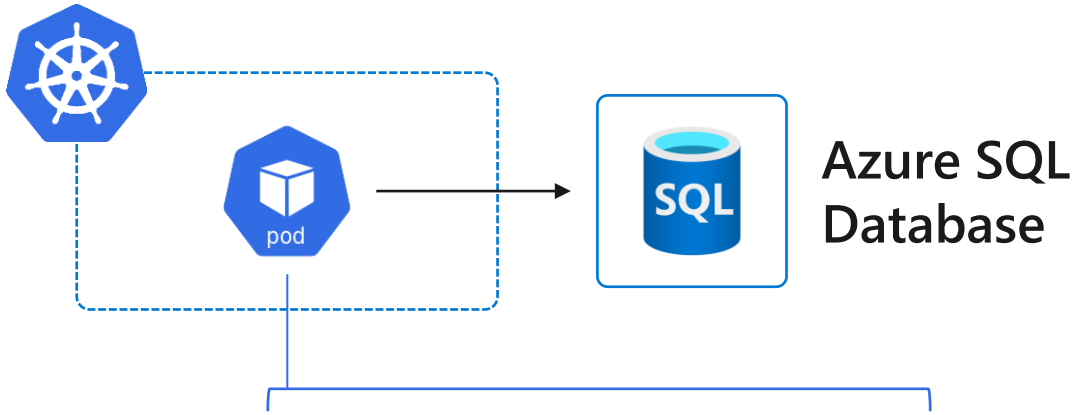
github.com/kubernetes-sigs/secrets-store-csi-driver



Azure AD Pod Managed Identity

Enables Kubernetes applications to access cloud resources securely with Azure Active Directory

- Using Kubernetes primitives, configure identities and bindings to match pods
- Without any code modifications, containerized applications can access resources using AAD as identity provider

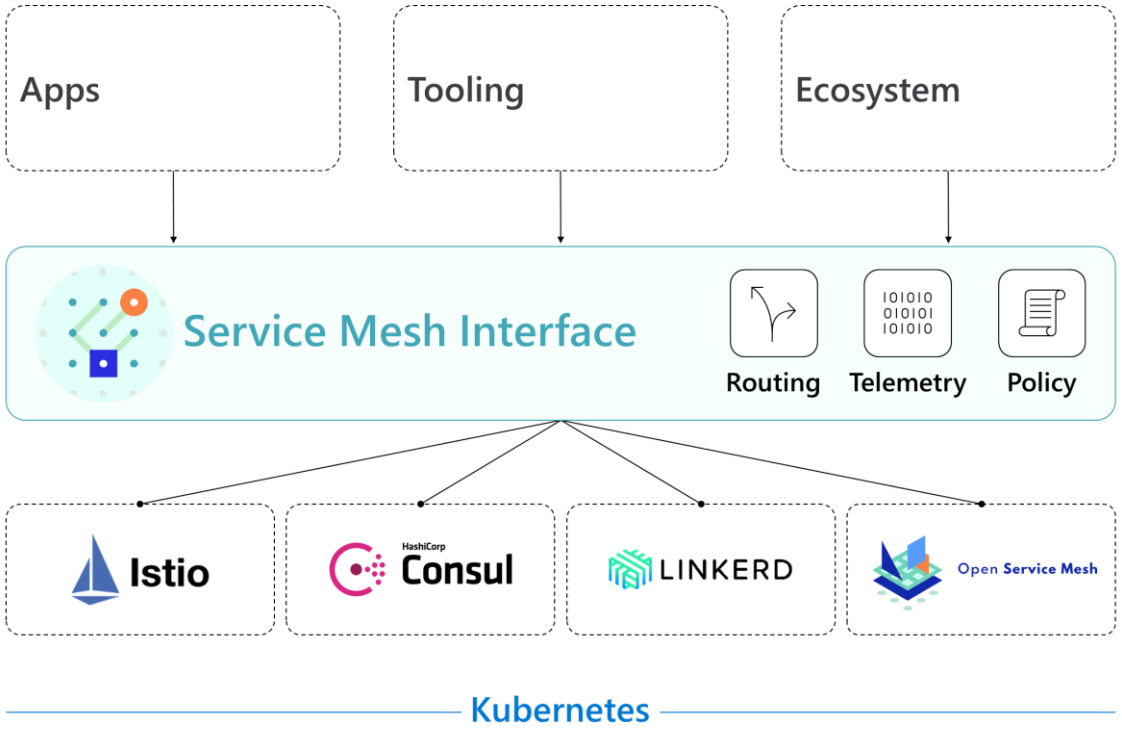



```
# MSAL (Microsoft Authentication Library)

using Microsoft.Identity.Client;

IConfidentialClientApplication app;
app = ConfidentialClientApplicationBuilder.Create(config.ClientId)
                        .WithClientSecret(config.ClientSecret)
                        .WithAuthority(new Uri(config.Authority))
                        .Build();

AuthenticationResult result = null;

try
{
   result = await app.AcquireTokenForClient(scopes)
                     .ExecuteAsync();
   // TODO Access something
}
{
   catch(MsalServiceException ex)
{
    // TODO Can't access service
}
```

azure.github.io/aad-pod-identity

Service Mesh Interface

- A standard interface for service meshes on Kubernetes
- A basic feature set of the most common service mesh use cases
- Flexibility to support new service mesh capabilities over time
- Space for the ecosystem to innovate with service mesh technology



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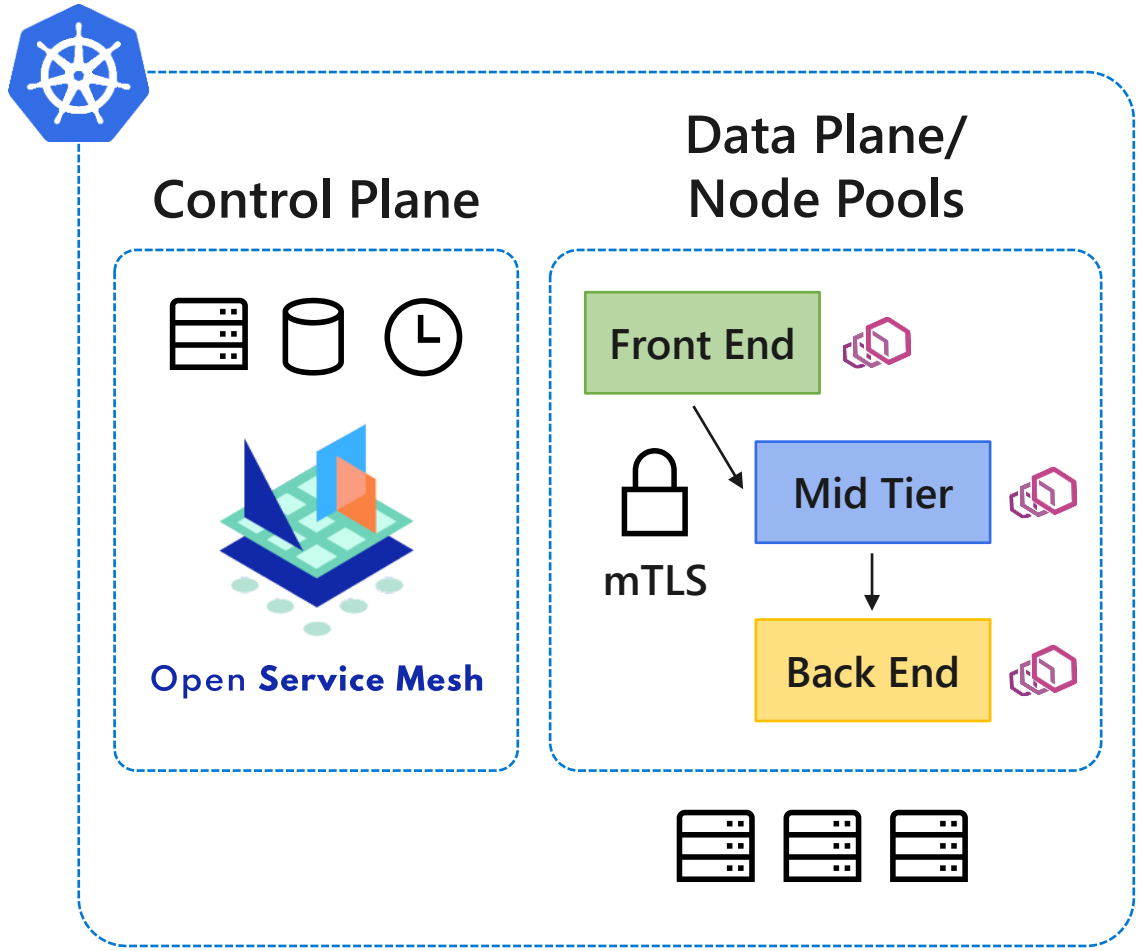
smi-spec.io

Open Service Mesh (OSM)

- **Simple** to understand and contribute to
- **Effortless** to install, maintain, and operate
- **Painless** to troubleshoot
- **Easy** to configure via Service Mesh Interface (SMI)



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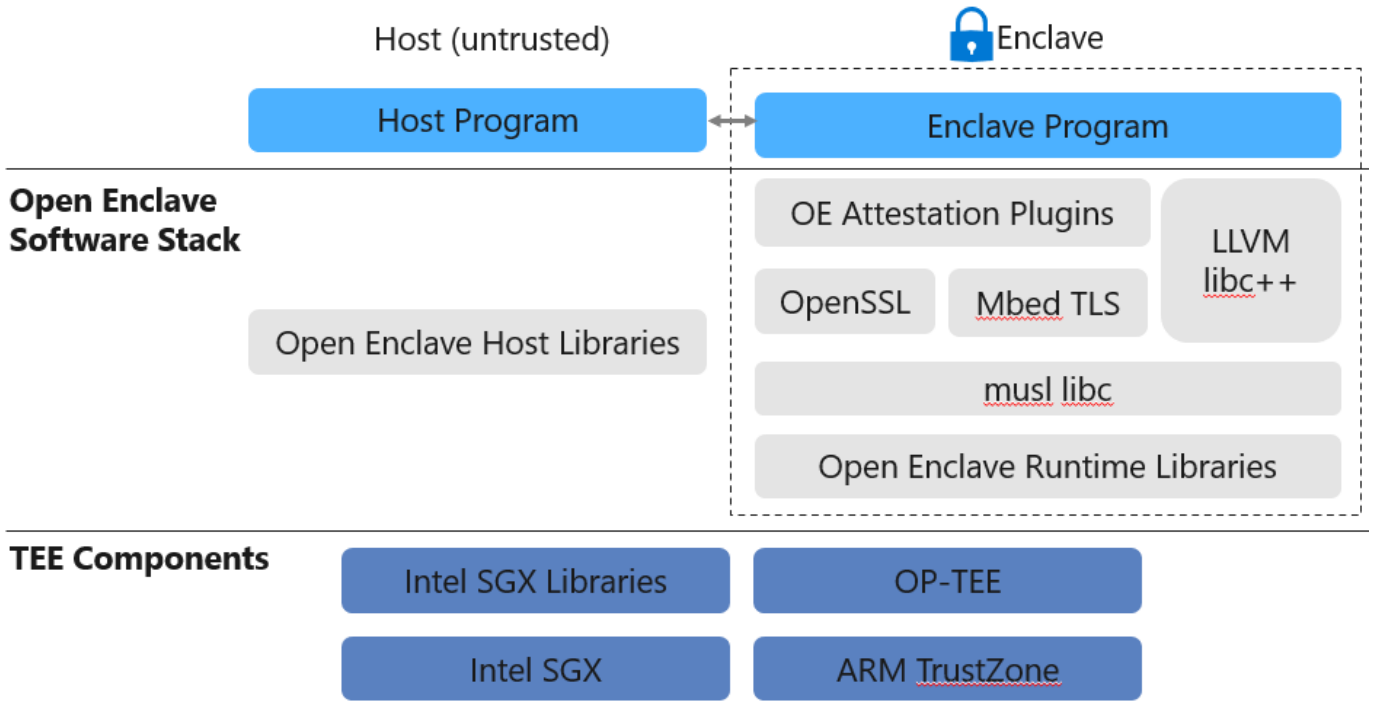
openservicemesh.io

Open Enclave SDK

Enables building applications based on Trusted Execution Environments

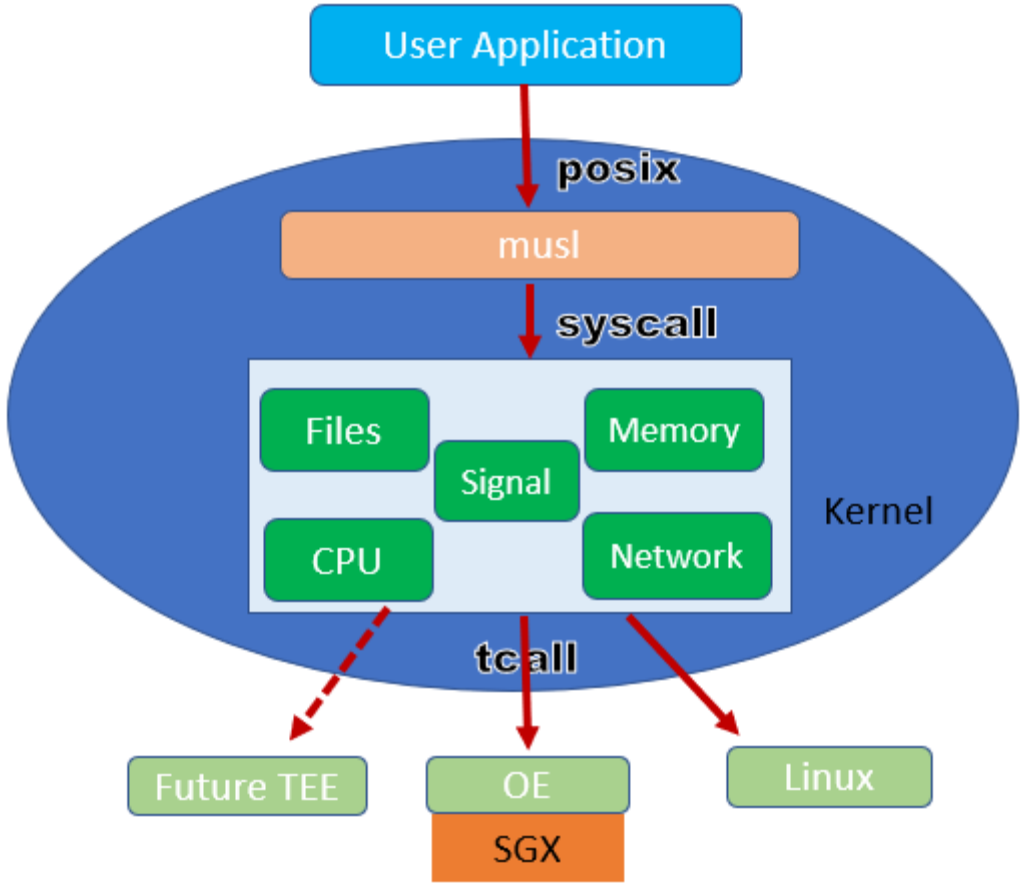
Provides consistent API surface across enclave technologies as well as all platforms from cloud to edge



openenclave.io/sdk

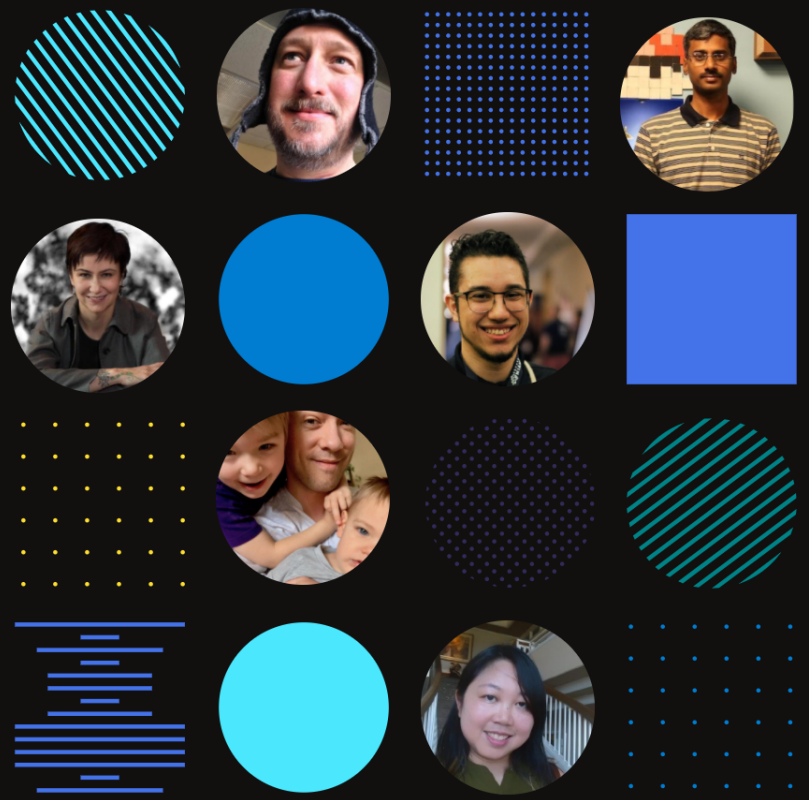
Mystikos: Bringing TEEs to Cloud Native

- Secure your Linux apps by using Trusted Execution Environments, with little or no modification in many cases
- Designed for the cloud-native deployment paradigm
- Simplifies re-targeting to other TEE architectures through a plugin system, and aim for a "build once; run anywhere" model



github.com/deislabs/mystikos

Open. Collaborative. Flexible.



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