

# ACL Digital Cloud Native Platform Services

ACL Digital provides Kubernetes-based cloud-native platform services with a plug-and-play architecture, seamlessly integrating any applications into its ecosystem.

This platform integrates a wide breadth of primary ecosystem tools related to Kubernetes, such as **Cluster Management, Service Mesh, Confidential Computing, High Availability, GitOps, Zero Trust Access, Observability, Backup, and Restore.**

The platform addresses the operational challenges while providing DevOps teams with integrated tools for running containerized workloads on any infrastructure, including **Bare Metal, AWS, GCP, Azure, and Hybrid Clouds.** Our platform services help in securing the Kubernetes Cluster - implementing **Role Based Access Control (RBAC), AD/LDAP Integration, Multi-Cluster, Multi-Tenancy, Multi-Cloud, Cluster Scanning, Benchmarking, Service Mesh, Admission Controllers** and much more - tailored to your security posture needs.

ACL Digital's cloud-native platform efficiently delivers essential Kubernetes services as managed cluster add-ons. We take care of the lifecycle and configuration of each add-on, ensuring seamless management.



# ACL Digital Platform Architecture with 5G Core

Application					
 EDGE COMPUTING  5G  AI ML  IOT  Cloud  Analytics					
Cluster Management	Zero trust Access	Service Mesh	Observability	GitOps	Backup & Restore
<ul style="list-style-type: none"> <li>▪ Multi-cluster Management</li> <li>▪ Cluster Dashboard</li> <li>▪ Application Management</li> <li>▪ Multi-cloud support</li> </ul>	<ul style="list-style-type: none"> <li>▪ User/Role Management</li> <li>▪ LDAP/OAUTH.</li> <li>▪ Secret/Certificate Management</li> <li>▪ Network Policies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Microservices Management</li> <li>▪ Zero downtime upgrades</li> <li>▪ Distributed Tracing</li> <li>▪ Circuit breakers</li> <li>▪ Hardware-based mTLS</li> </ul>	<ul style="list-style-type: none"> <li>▪ Custom App Monitoring</li> <li>▪ App and audit logging</li> <li>▪ Alerts and notifications</li> <li>▪ Metrics and events</li> </ul>	<p><b>Confidential Computing</b></p>	<p><b>High Availability</b></p>

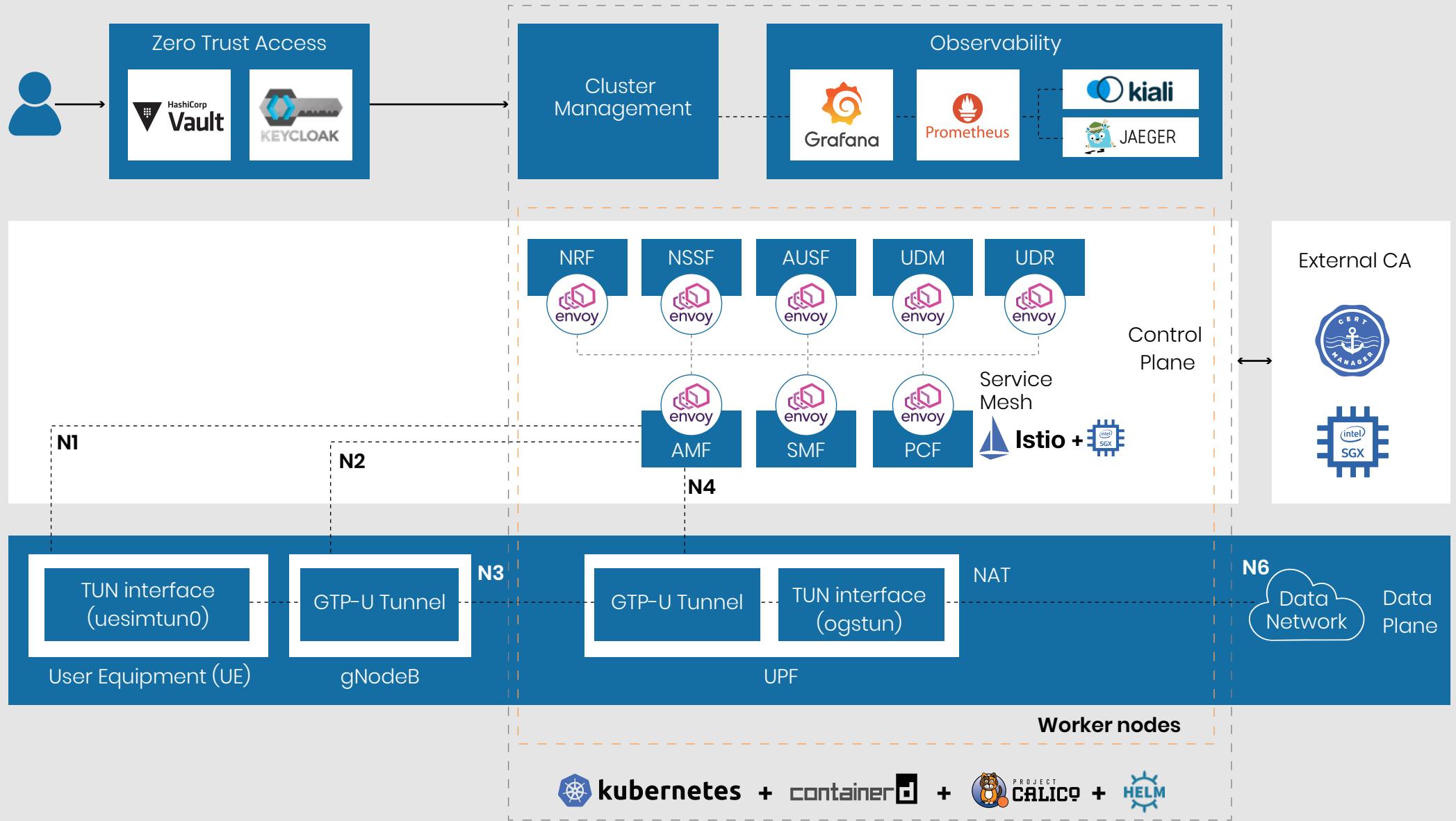




## Key Highlights

- Automated cloud-native deployment and management of diverse workloads
- Zero trust security for edge computing
- Support on SSO and RBAC providing high-level security
- Real-time statistics monitoring and reporting
- Custom observability factor for application-specific metrics
- Service mesh with external CA for secure SBI
- Intel SGX-based key provisioning for applications
- Secret management with SGX-based secret storage
- Seamless Day1 and Day2 Operations
- Line rate pkt processing and linear scaling
- High-performance, scalable pod networking
- Compliance reports and altering

# Reference Platform Architecture for 5G



# ACL Digital Platform Service Offerings

1

## Cluster Management

- Manages the entire life cycle of Kubernetes clusters deployed in data centers or public clouds
- Flexible deployment to different locations and use cases to suit the needs
- Automation and security via cluster deployment and version upgrades with minimal downtime
- Support for Multi-cluster management

2

## Confidential Computing

- Intel SGX-based platform attestation and key provisioning for Edge applications
- Critical 5G core, Edge, and other Telecom applications that run on the cloud are secure with SGX hardware-based security
- Gramine-based containers to run the whole application inside HSM without source-code modification/recompilation
- CNF execution in SGX enclave for most minor attack surfaces

3

## Zero Trust Access

- Secure workload identities with HSM-based zero-trust access
- Support for SSO, Strong authentication (OAUTH2), user management, and identity federation
- Support for granular RBAC access to clusters and containerized workloads
- Real-time drift analysis to eliminate misconfigurations and vulnerabilities

4

## Automated Deployments

- Ansible playbook to automate the Kubernetes cluster provisioning
- Automatic rollout and rollback of upgrades
- Provision, scaling, update, and clean-up of clusters
- Customized profiles for service deployments across on-prem, access edge, and cloud

5

## Secure Service Mesh

- Enhanced service mesh for HSM-based mTLS communication
- Integration with SGX-based external CA
- Interoperability Proven solution with commercial 5G stack
- Protect access to your API gateways and ingress/egress proxies
- Secured mTLS architecture across core, edge, and hybrid clouds

6

## High Availability

- Horizontal and Vertical resource scaling based on resource demands
- Manages and monitors critical data protection using backup solutions to mitigate the risk of data loss or corruption
- Traffic splitting for Canary and blue/green deployments
- Service resiliency with circuit breaking, time-out, and retries

7

## Observability with AI/ML

- Customized application-specific metrics and traces for 5G CNFs
- Proactive alerting and monitoring using AI/ML to minimize application failures
- Early detection of performance bottlenecks, security threats, and abnormal resource usage
- Faster troubleshooting of issues with data from various NFs based on Network slice
- Collecting platform metrics using collectd and Telegraf agent, generating reports for high visibility of platform status and health

# ACL Digital Platform Use Cases

1

Deploy, manage, and scale containers to make sure the operations have consistency and reliability

2

SGX to protect cryptographic keys and provide HSM for various workloads

3

Visibility and control over platform and application performance

4

Protect AI/ML workloads and applications by running them in the SGX enclave

5

HSM-based secure mTLS communication between 5G workloads

6

Customized observability for application-specific metrics and traces for diverse workloads

7

HSM-based ingress for secure communication with external services

8

HSM-based external CA, critical server, and attestation services for secure communications over Edge

9

Integrate traditional, modernized, and cloud-native workloads, including AI/ML, IoT, and Edge

10

Multi-cloud support for disaster recovery to achieve greater resilience and availability

11

Application deployment across clusters in multi-cloud environments to avoid vendor lock-in



## For any business-related queries, contact

[business@acldigital.com](mailto:business@acldigital.com) | [www.acldigital.com](http://www.acldigital.com)

USA | UK | France | India



Proprietary content. No content of this document can be reproduced without the prior written agreement of ACL Digital.

