Edge applications are agile, evolving, and complex

Edge computing, IoT and Industrial IoT are reshaping the architecture of cloud computing. The traditional model of “clouds for people” (e.g., web applications) is being replaced with “clouds for machines.” Intelligent edge devices are becoming a highly-distributed service ecosystem that includes edge computing, gateways, network-based services, public clouds and legacy systems. Edge applications are agile and evolve rapidly. Thus so, must the local cloud resources that support them.

Closed-Loop Orchestration

Closed-Loop Orchestration is a life-cycle model for ensuring the integrity of cloud resources, regardless of their location. In large cloud centers, the infrastructure that supports applications is typically based on a reference architecture that is easily repeatable in a "scale-up" service model. However, as you move closer to the edge, and the end user, the variability of the infrastructure dramatically increases.

This variability comes in many forms such as location, size, proximity, connectivity requirements, environmental factors, etc. Other factors such as technology lifespan and refresh rates must also be considered. On top of that, the requirements of the applications must be taken into account - latency, proximity, affinity, bandwidth, etc.

To ensure that edge computing, IoT/IIoT and mobile edge applications perform as expected, the right resources, in the right amount, at the right time, and in the right place must be available.

Managing all these factors requires a different approach. Closed-Loop Orchestration applies "continuous development/continuous integration" to ensure integrity and reliability of highly-distributed Edge Cloud resources.
Closed-Loop Orchestration

Create/Manage Inventory and Topology
Create a complete, extensible inventory and topology of all available resources through auto-discovery, or pre-defined infrastructure and application models such as TOSCA (Topology and Orchestration Specification for Cloud Applications).

Apply Intelligence
Utilize sophisticated modeling to intelligently apply and enforce application policies (e.g., latency, proximity, affinity, security, bandwidth, etc.) to identify, allocate and provision appropriate resources.

Orchestrate with Automation
Apply policy-driven automation using the inventory and topology to eliminate manual intervention, scripting and errors. Enforce service level adherence through composite workflows and conditional logic. Employ parallel processing for high scalability.

Monitor
Through system management interfaces, analyze changes in application requirements or infrastructure anomalies and determine appropriate corrective action scenarios.

Heal/Change
Based on workload demands or corrective actions, apply new policy-driven orchestration to return or adjust cloud environment to target operational and business performance objectives.

The CPLANE.ai Closed-Loop Orchestration is an iterative process that continually updates the inventory and topology model as changes occur within the cloud ecosystem. This ensures broad visibility into and optimum utilization of cloud resources.
Single Integrated Solution

CPLANE’s Cloud Orchestration platform is a fully-integrated solution that provides distributed cloud orchestration with integrated software-defined networking. With Closed-Loop Orchestration, the Cloud Orchestration platform optimizes the deployment and management of cloud environments across a spectrum of service delivery models:

- Large datacenter clouds
- Network-based resources
- Network-edge cloud services such as CORD (Central Office Re-architected as a Datacenter)
- MEC gateways (Multi-Access Edge Computing)
- Mobile-edge cloud services (e.g., 5G towers, light poles, etc.)
- Embedded clouds (e.g., smart building, wind turbines, etc.)

By utilizing CPLANE's distributed Cloud Orchestration platform with integrated information and topology plus service modeling and abstraction, enterprises and service providers can build sophisticated service chains with the assurance that they quickly and reliably respond to their business and operational requirements.

About CPLANE.ai

CPLANE.ai orchestrates and manages highly-distributed clouds for Edge Computing, IoT, Industrial IoT, MEC, Fog, and intelligent edge applications. We eliminate the complexity associated with deploying cloud resources to millions of Edge Computing end points, allowing enterprises and service providers to focus on value-added business and IT services.

To learn more about our fully-integrated cloud orchestration and software-defined networking solutions, visit us at: www.cplaneai.com

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