



Nephio for Enterprise: Possibilities & Use Cases

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Nephio Can Already Address the Enterprise

- Nephio is very effective for enterprise use cases in addition to telco
- Related, Nephio can orchestrate and manage cloud native applications in addition to xNFs

Nephio's goal is to deliver carrier-grade, simple, open, Kubernetes-based cloud native intent automation and common automation templates that materially simplify the deployment and management of multi-vendor cloud infrastructure and network functions across large scale edge deployments. Nephio enables faster onboarding of network functions to production including provisioning of underlying cloud infrastructure with a true cloud native approach, and reduces costs of adoption of cloud and network infrastructure.

Hot use cases

- LLM Orchestration
- Security Orchestration (AccuKnox)
- IoT (MicroShift/Portainer/K0s/K3s)

Hot communities

- OpenTofu
- L3AF

LLM Orchestration

LLM Orchestration e.g. Llama2, LangChain
using a consistent API

Network Services e.g. Cloud data sources,
SD-WAN PoP

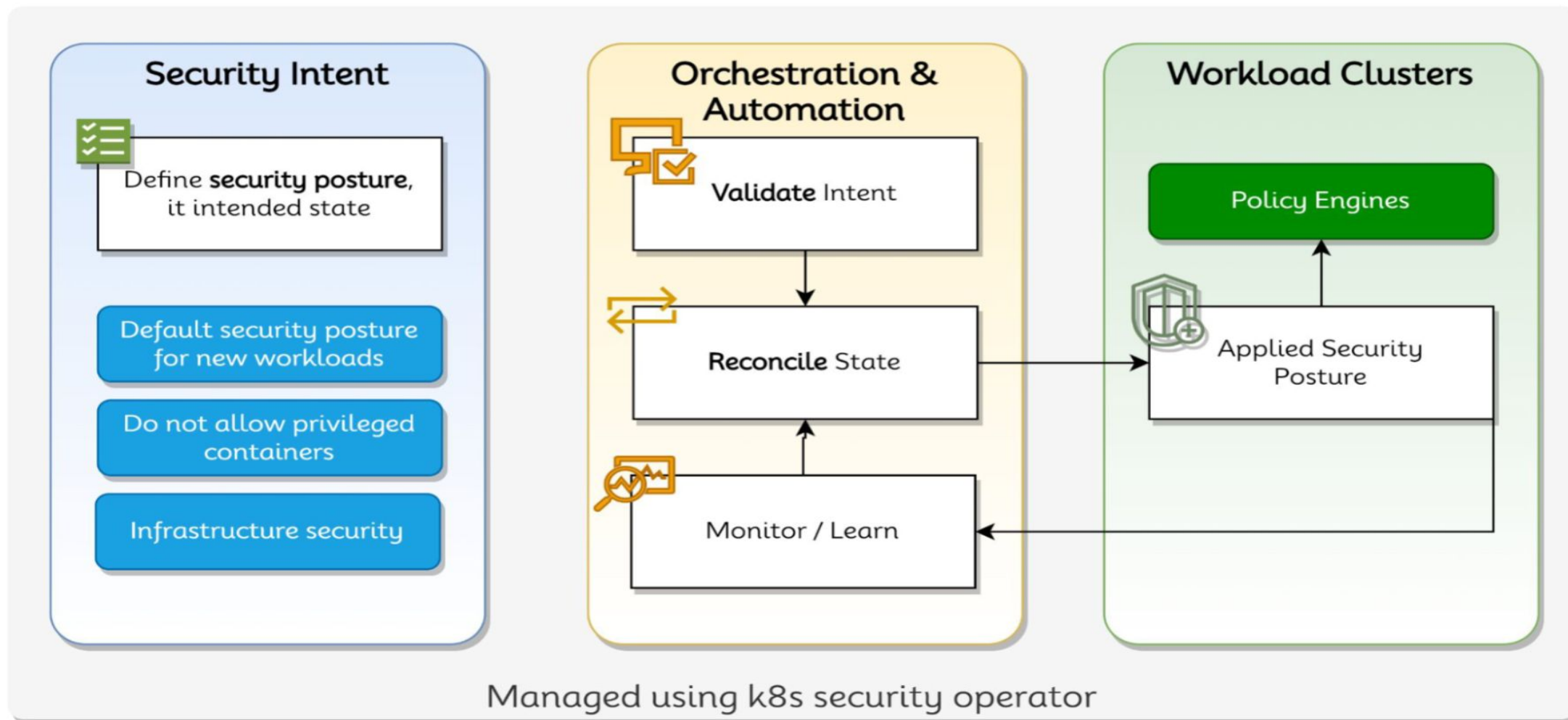
Infra Orchestration e.g. Compute (bare metal or
VMs), Storage, Kubernetes Cluster

- Use the existing Nephio design principles to automate the deployment of AI models across different set of clusters based, similar to how a 5G NF automation is demonstrated in R1.
- Use AI in Nephio in the context of service assurance closed loops. Predict anomalies in the data traffic pattern using the AI models.
- Use AI in Nephio to resolve high level user intent and find best resources to deploy an E2E service.

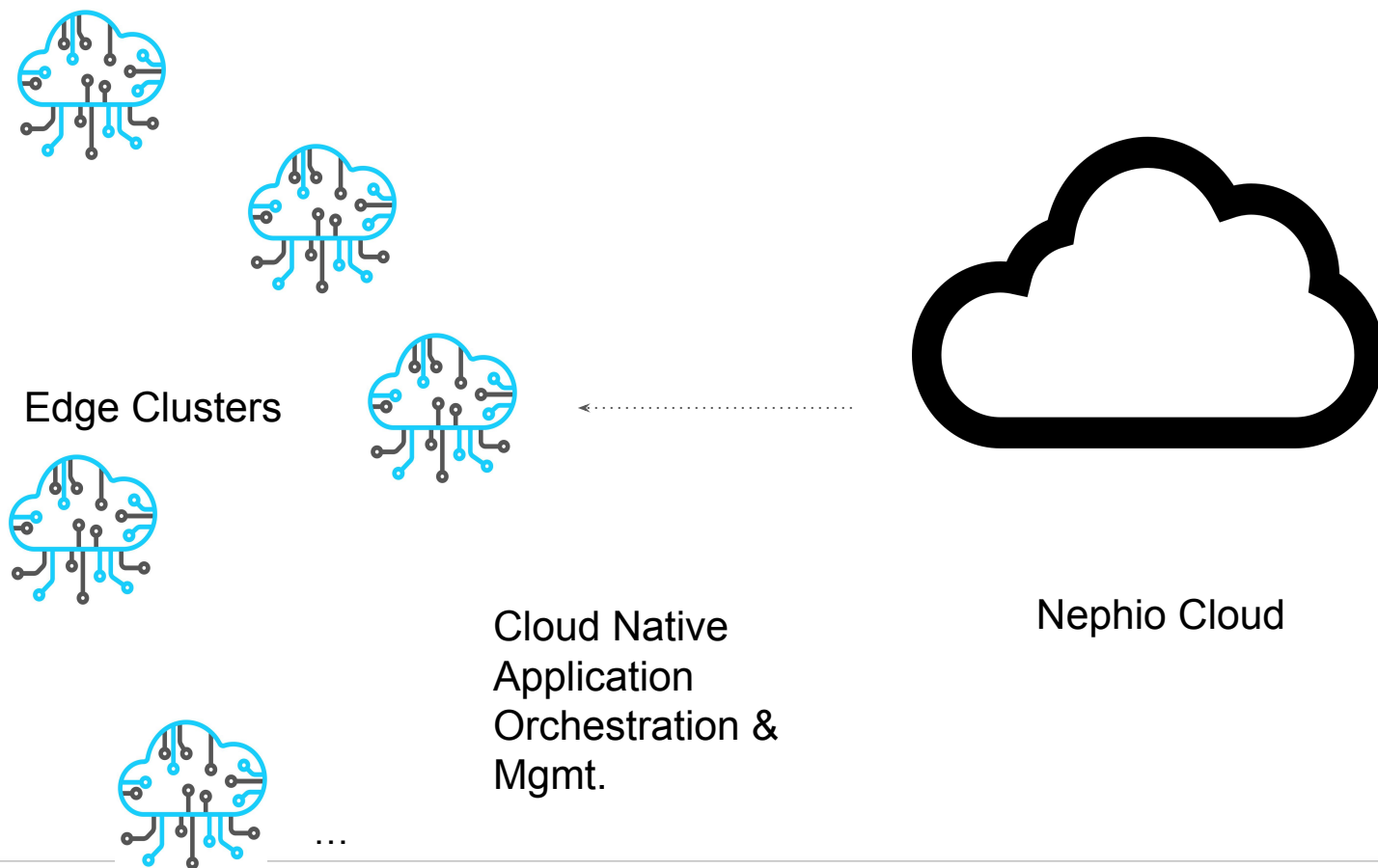
Security Orchestration (AccuKnox)

- Securing 'Cloudification' of 5GC & RAN deployments in Public/Hybrid Cloud
 - Continuous SBOMs, microsegmentation, k8tls, etc
- Securing 5G Network Functions
 - K8s hardening, vuln. scanning, SBOMs, RBAC, least privilege, monitoring/logging and auditing
- Securing Edge deployments from distributed attack vectors
 - Process whitelisting, microsegmentation, file integrity with latency control
- Securing O-RAN open fronthaul
 - MobiFlow Auditor records L3 protocol state transitions & base stations aggregate statistics and a Security focused Service Model (secSM)

Multi Cluster k8s security operator



IoT Cloud Native Application Orchestration

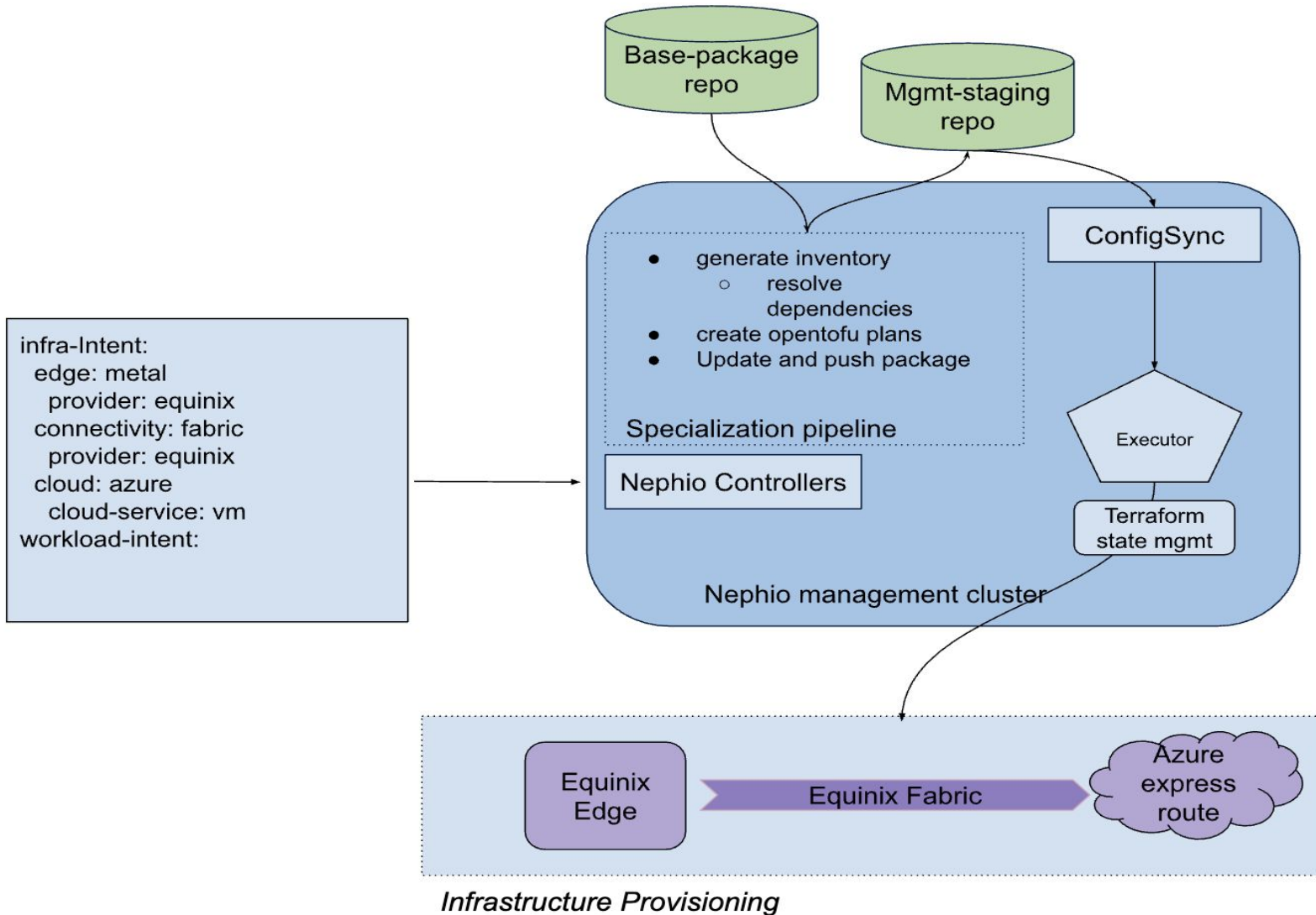


- Use the Nephio design principles along with the existing core Nephio controllers to build IoT Cloud Automation platform.
 - Infrastructure intent to deploy and manage light weight kubernetes distributions like K0s, microK8s
 - IoT application orchestration.
 - Cloud the edge network automation and management.
 - Service assurance via continuous reconciliation.

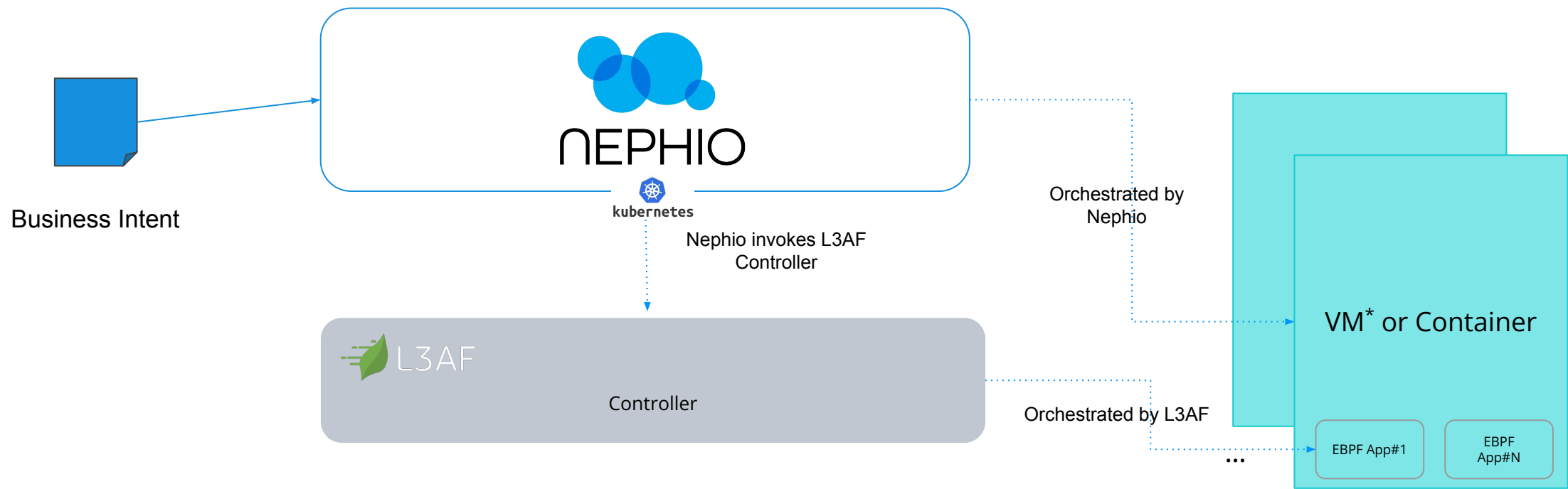
OpenTofu + Nephio = ~~laC~~ IaD

Nephio can bring a slew of valuable features to OpenTofu for edge (and cloud) use cases:

- Declarative intent (convert IaC to IaD)
- Business intent -> technical intent mutation
- Scale via pull model
- Dependency handling
- Constant state reconciliation
- Rollback



L3AF + Nephio



L3AF Vision

- . Provides platform for orchestrating eBPF kernel functions.
- . A kernel function marketplace where users can share eBPF programs and any associated userspace programs

L3AF + Nephio

- . Envision a Nephio controller for L3AF platform.
- . Nephio KRM functions to dynamically create the required configuration interface with L3AF controller. (explore via Nephio Enterprise SIG)

Q&A, Thank You

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LFN Developer & Testing Forum

Open Process Automation (Ubicity)

Support migration of industrial process automation systems

- Away from closed proprietary systems
- Towards software components deployed on COTS hardware
- Using open standards