



# クラウドネイティブ環境における ルーティングソリューション

---

**Koichi Kinoshita**

**Juniper Networks**

**JUNIPER**  
NETWORKS

Driven by  
Experience™



## 本日の内容

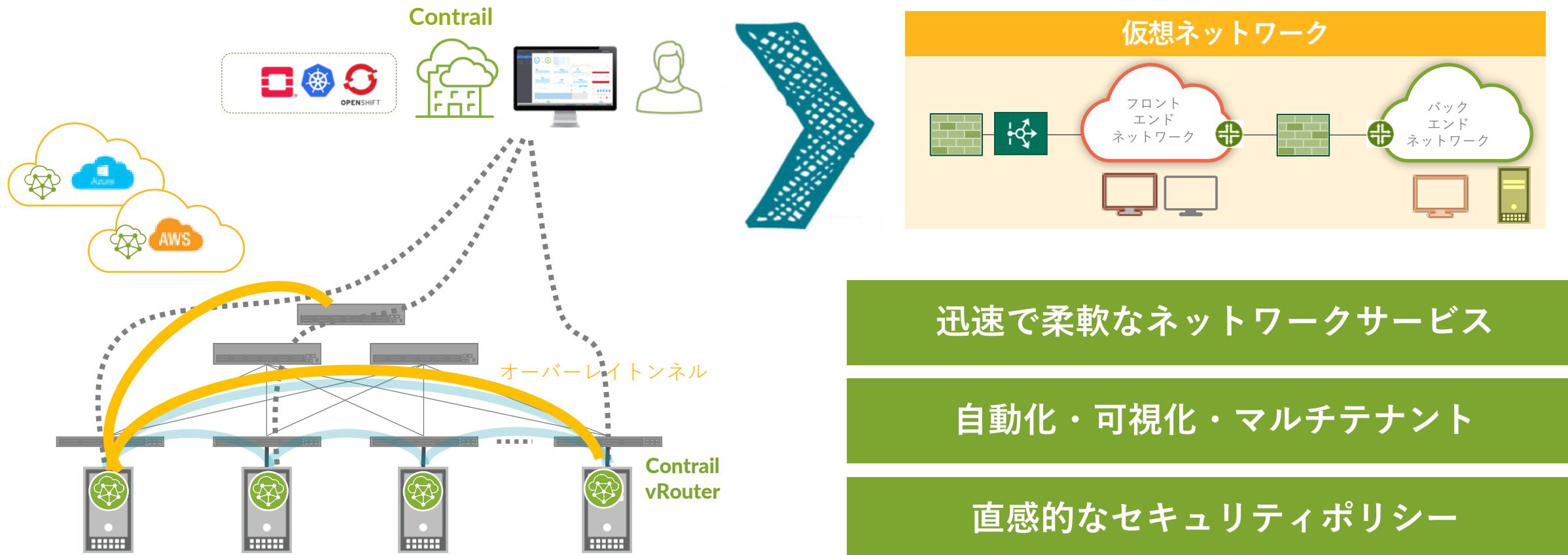
- **Cloud-Native Contrail Networking (CN2)**
- **Juniper Cloud-Native Router (J-CNR)**
- まとめ



## 本日の内容

- **Cloud-Native Contrail Networking (CN2)**
- **Juniper Cloud-Native Router (J-CNR)**
- まとめ

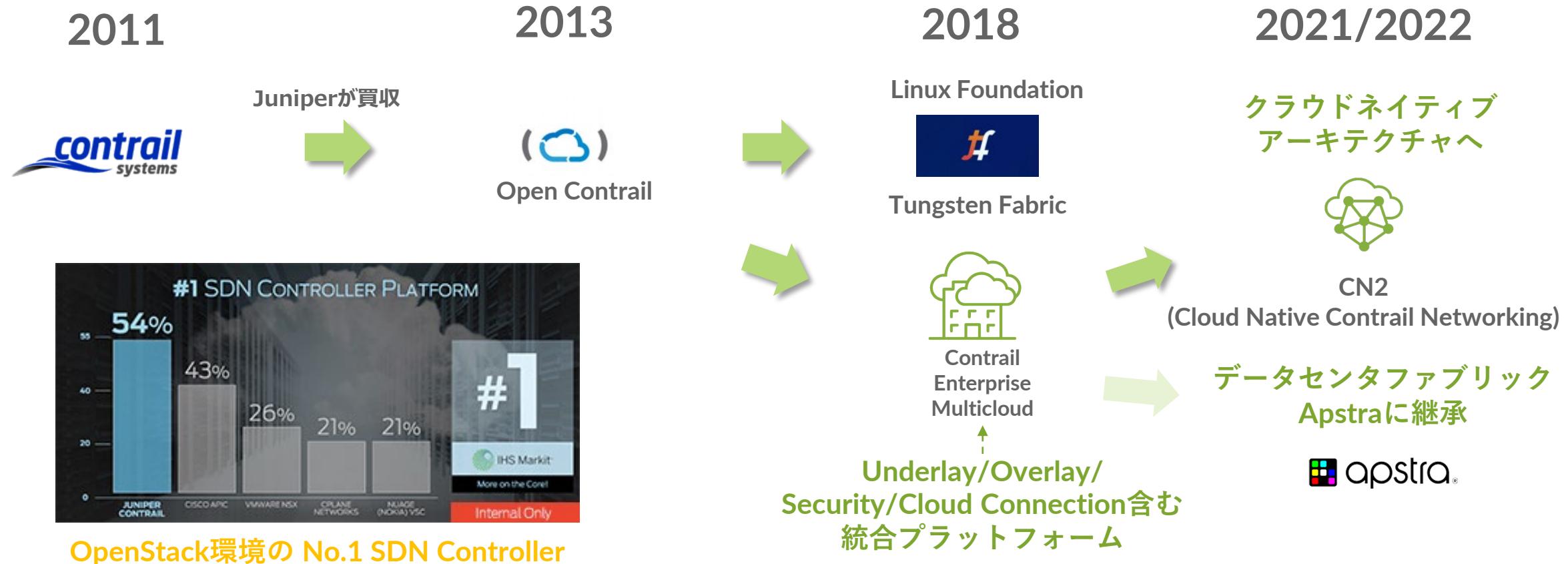
# Contrail Networking 概要



ソフトウェアベースの柔軟な仮想ネットワークを提供

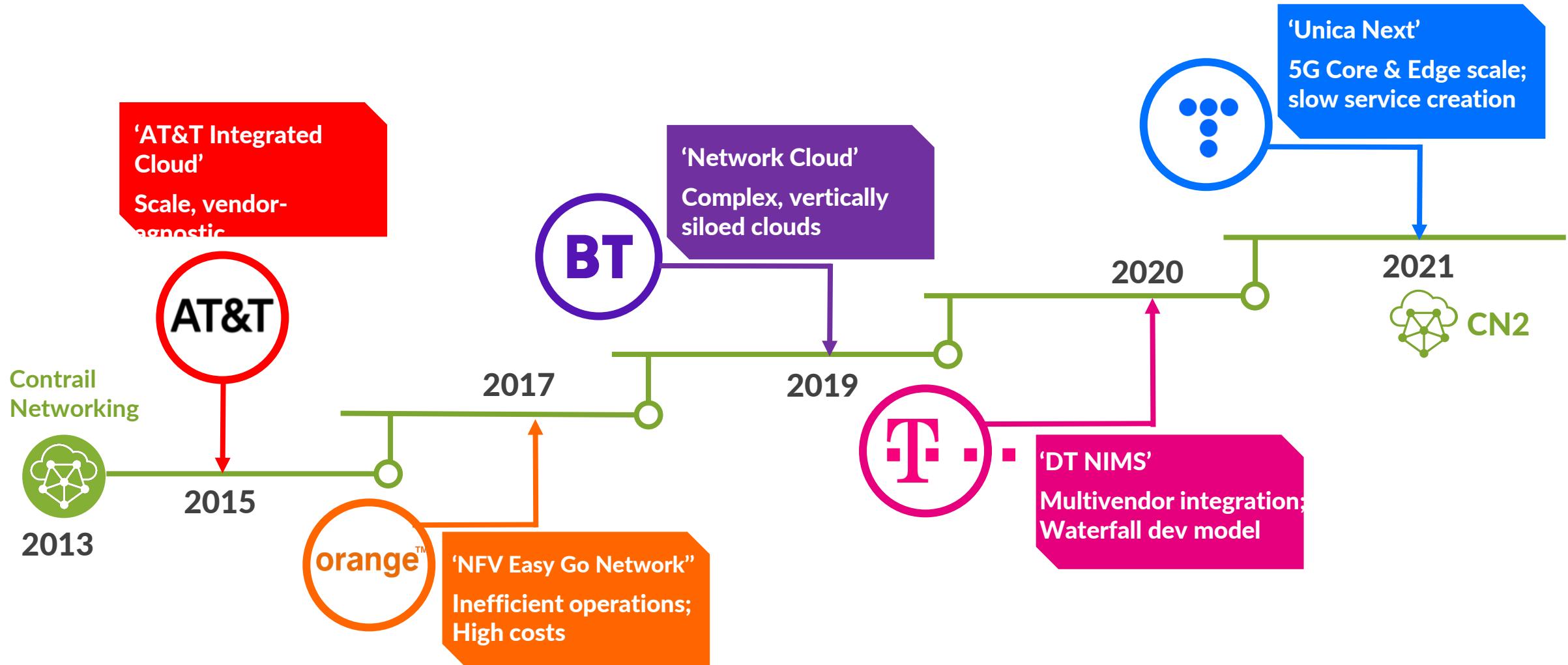
# Contrailの進化

Contrailはお客様やマーケットの期待にあわせて進化



# Juniper's decade of experience deploying SP cloud solutions

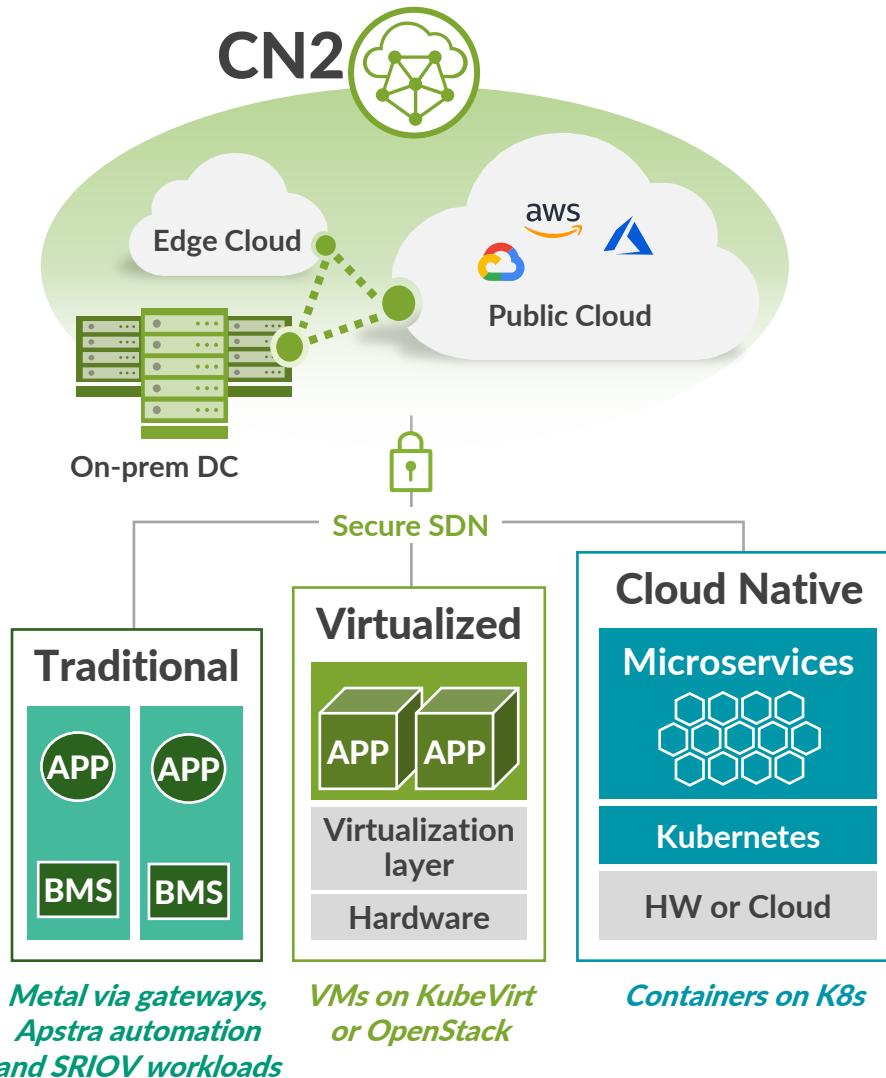
## Contrail has tackled the toughest SP cloud and telco cloud challenges



# CN2: Cloud-Native Contrail Networking

Values: Investment protection, flexibility, agility, and improved economics

★ *UNIQUE to CN2*



## K8s-Native SDN

A seamless experience built into Kubernetes itself

## Cloud-Native Networking

Hybrid/Multicloud consistency for better operational economics

### ★ Hybrid SDN for K8s and OpenStack

Infrastructure investment protection and evolvable infrastructure

### ★ NetOps-Driven Automation

Simple, repeatable CI/CD pipeline test assurance at cloud scale

### ★ One-to-Many Operational Economics

Centralized multi-cluster networking and monitoring for scalable ops

# まとめ: CN2の特徴

## 従来のContrail の機能



Advanced  
Networking



Advanced  
Security

柔軟な仮想ネットワーク(L2/L3, テナント分割)

vRouterの高機能なファンクション  
(SNAT, QoS, IPAM, S-Chaining, BGP etc.)

動的で直感的なセキュリティポリシー

自動化・可視化・マルチテナント

オープン(非ハードウェア依存)

+

## CN2による更なる強化



Extend-ops.



Multi-cluster



Automate

K8s-Native SDN

マルチクラウド対応 (on-prem / public cloud, etc)

Kubernetes環境とOpenStack環境に対応

Automation (NetOps / GitOps)

K8s マルチクラスター / フェデレーション



## 本日の内容

- **Cloud-Native Contrail Networking (CN2)**
- **Juniper Cloud-Native Router (J-CNR)**
- まとめ

# J-CNR - Juniper Cloud Native Router



Performant software-based router for x86 and ARM

Junos routing and management

DPDK vRouter forwarding plane

Implemented in Kubernetes

Light footprint - utilize fragmented compute resources

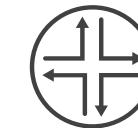


CNR is Ideal

In cloud-native environments

To complement HW routers when

In an Intel FlexRAN designed D-RAN solution



JunOS CRPD

Control Plane



DPDK

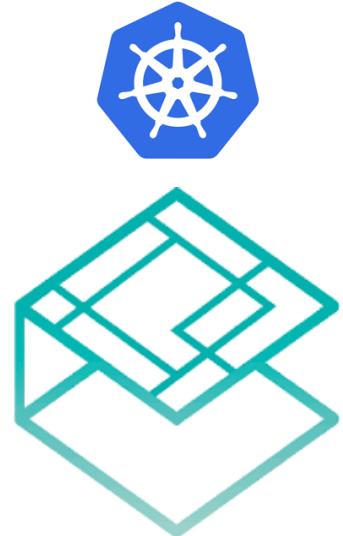
Contrail DPDK Forwarding Plane

Forwarding Plane

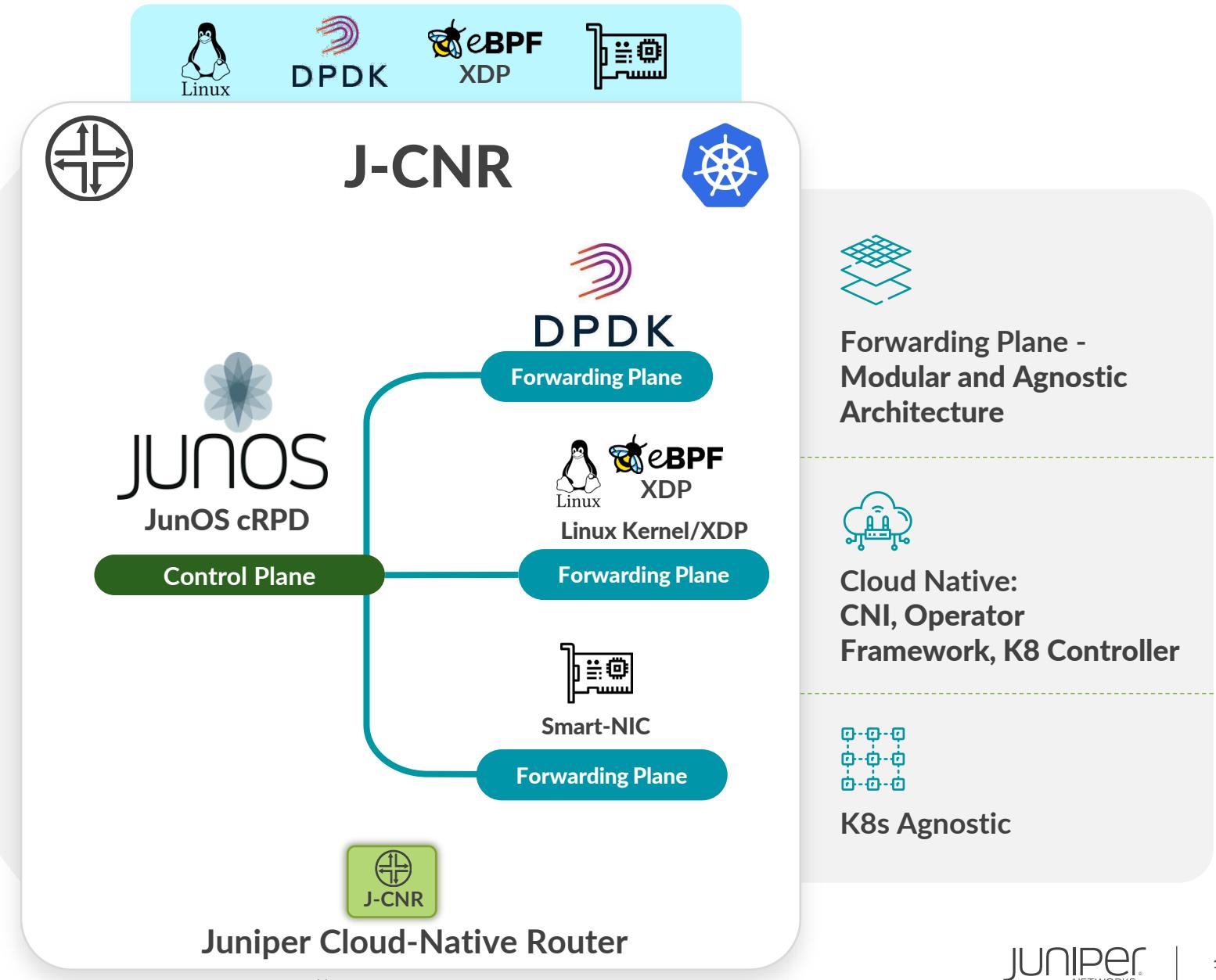
Cloud-Native Router

## Mature Hardened cRPD with Mature Hardened vRouter Built on JUNOS

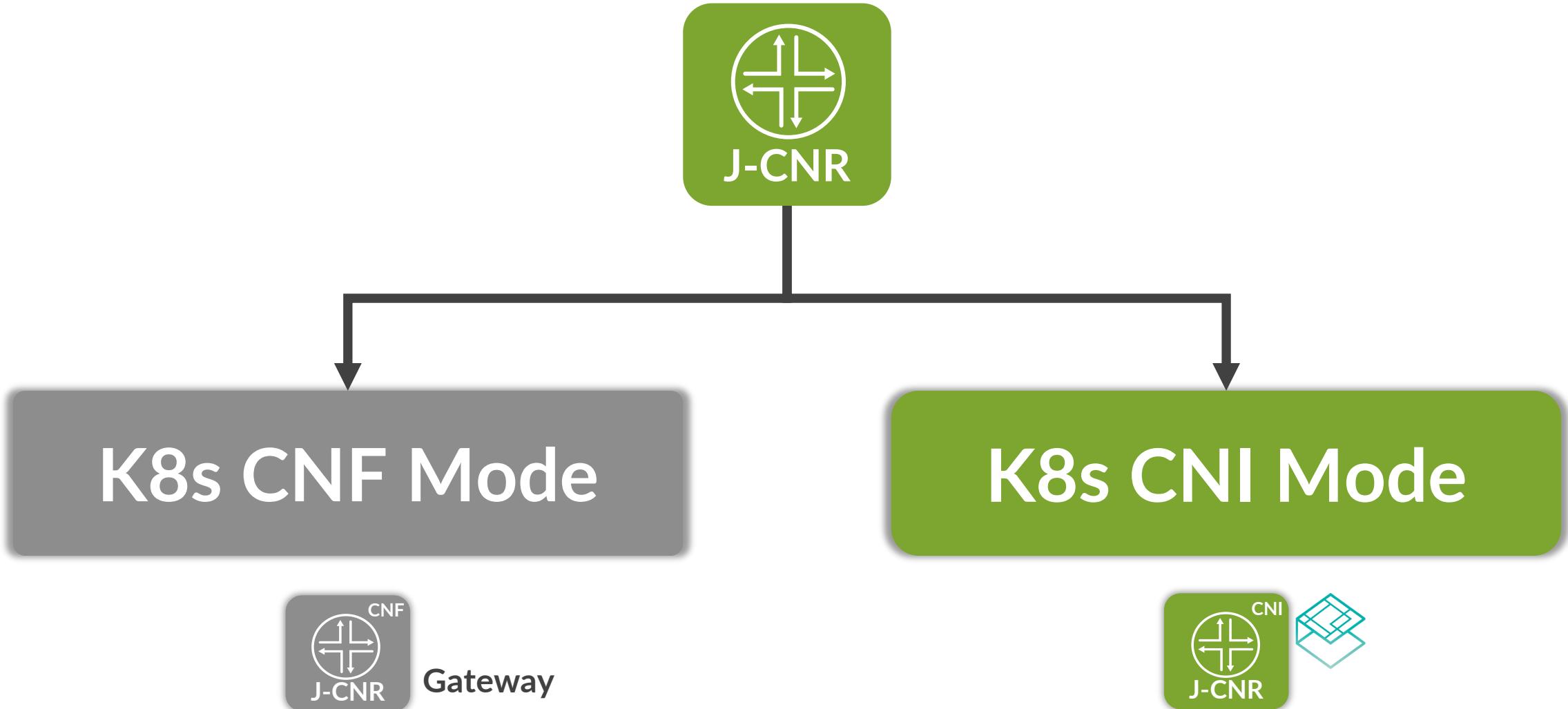
# J-CNR Overview (*High-Level*)



K8s CNI  
/ CNF (GW)

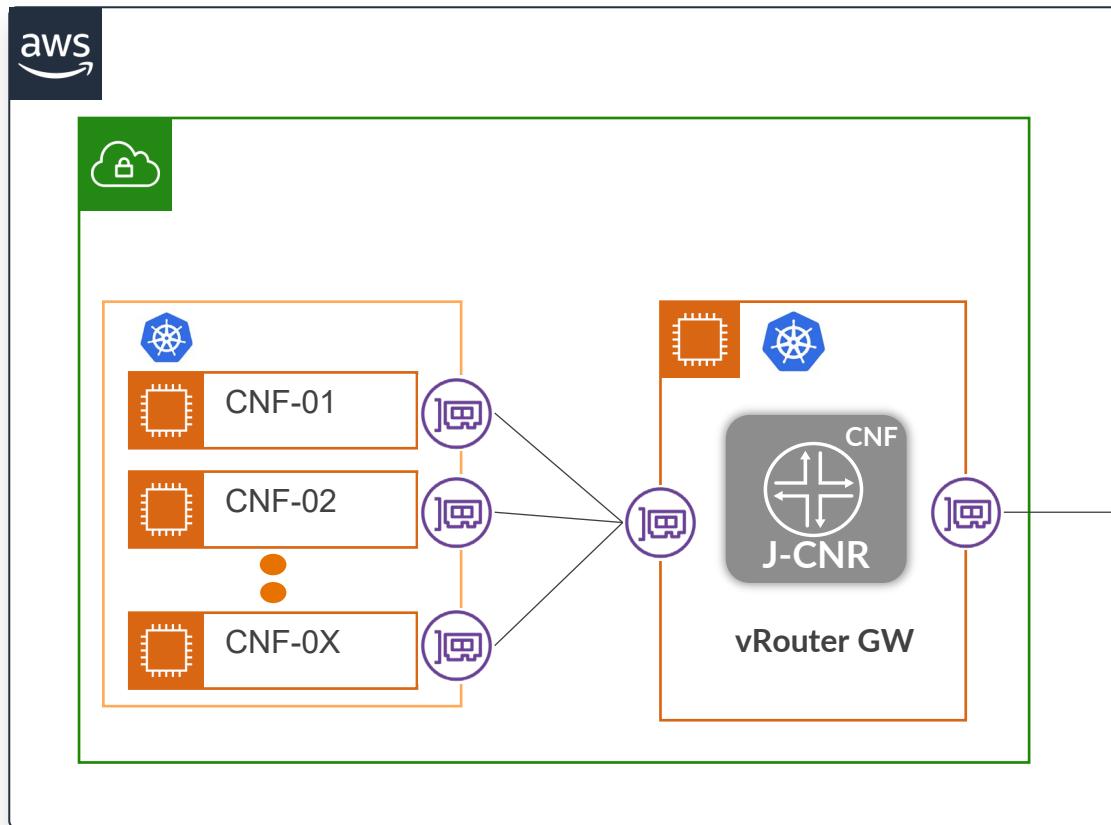


# J-CNR Deployment Mode

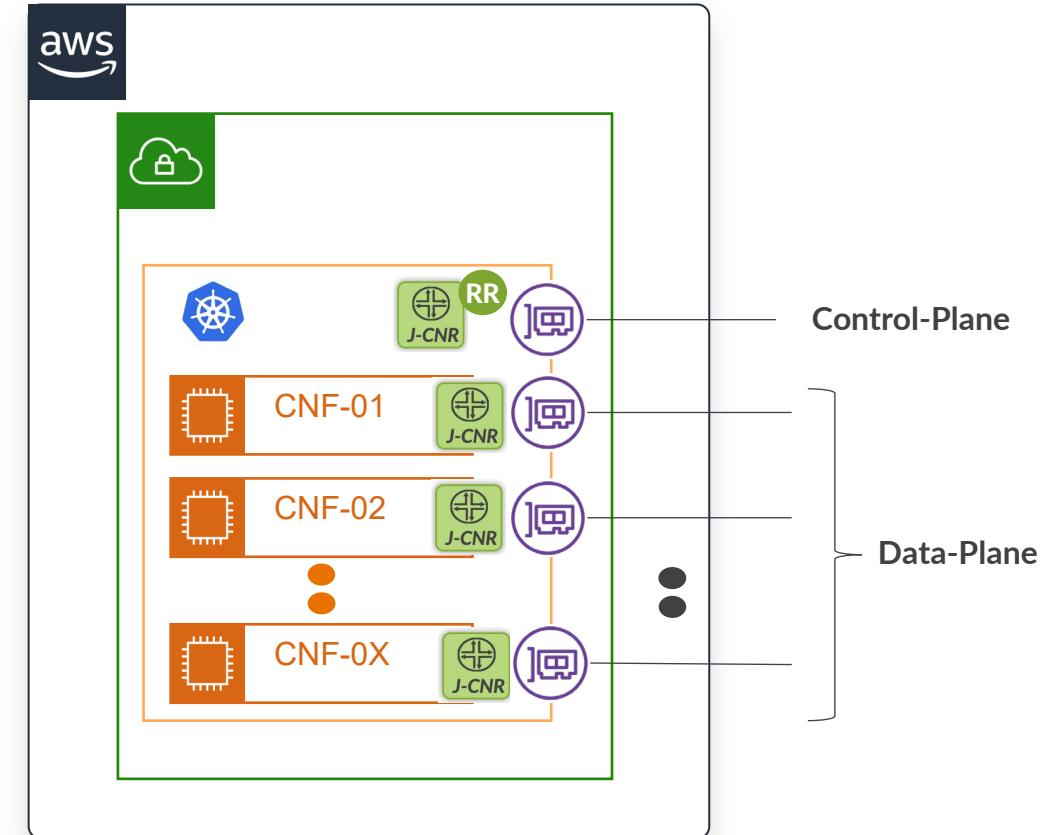


# J-CNR in Telco DC VPC

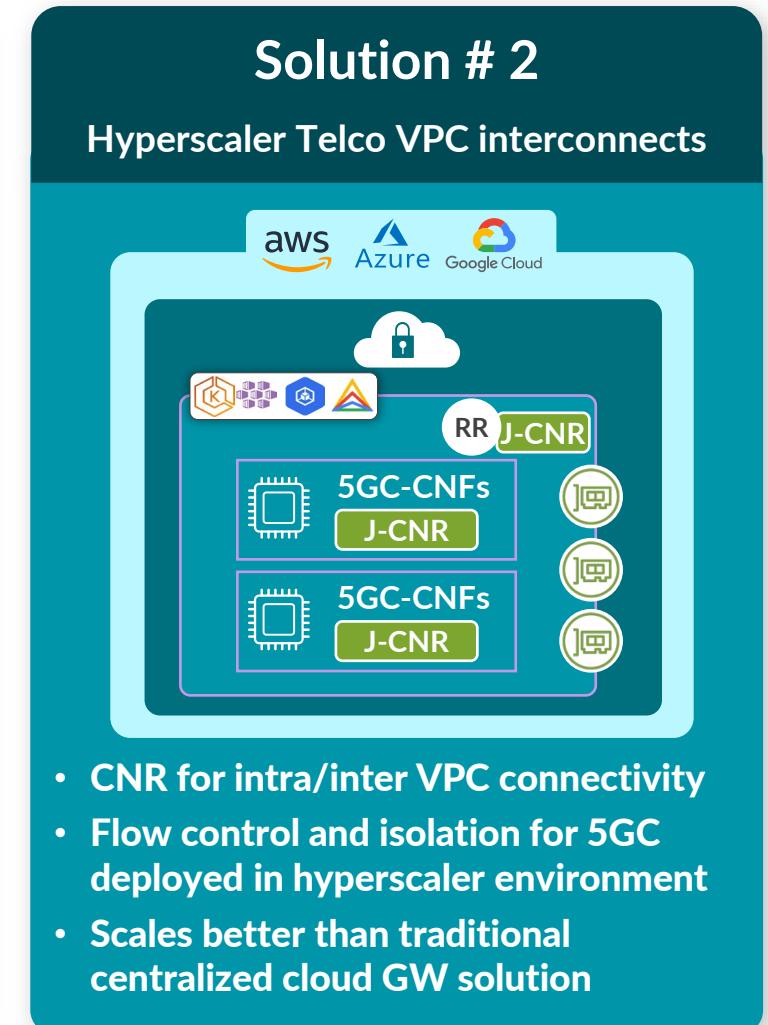
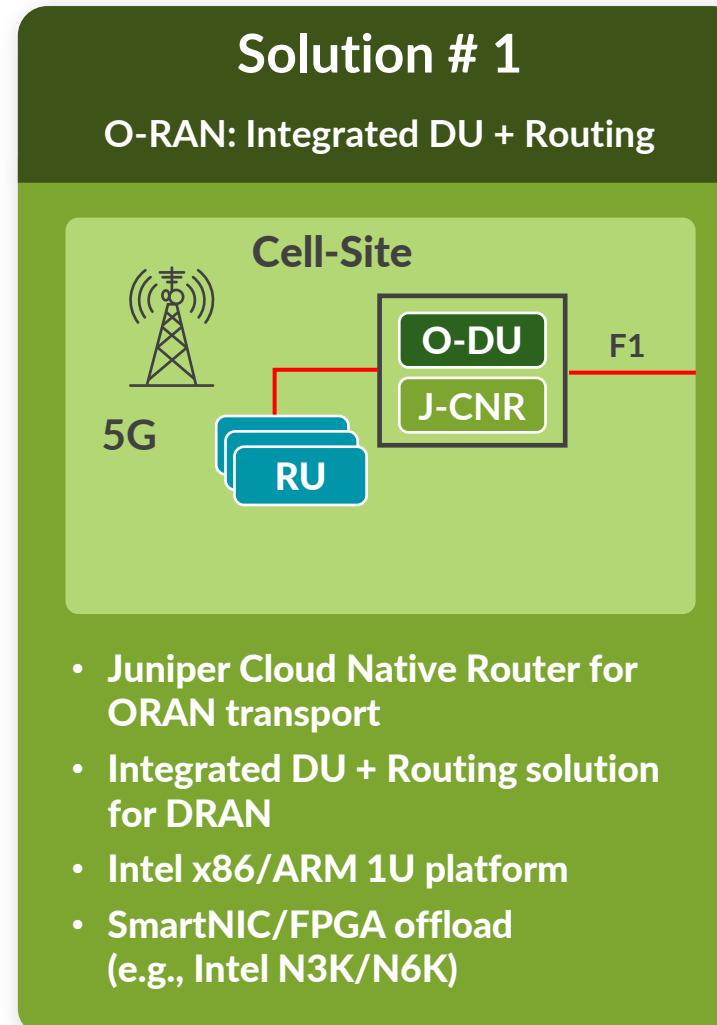
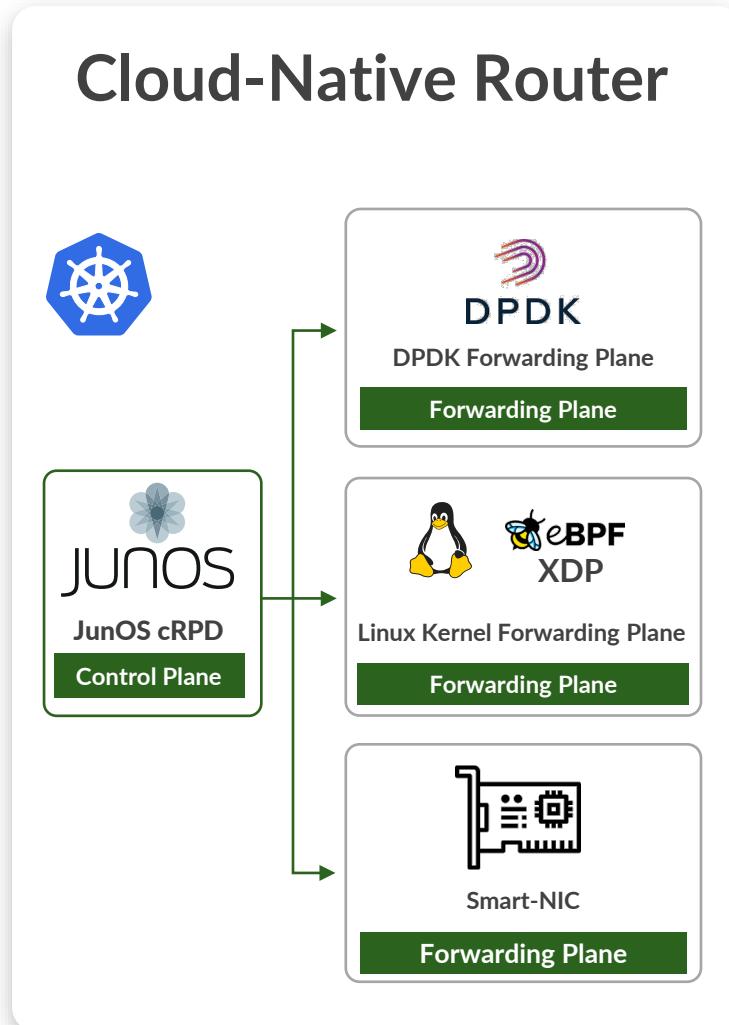
## Standalone Mode Design



## Distributed Networking Design with Cloud-native Approach



# Juniper Cloud Native Router – Use Cases





## 本日の内容

- **Cloud-Native Contrail Networking (CN2)**
- **Juniper Cloud-Native Router (J-CNR)**
- まとめ

クラウドネイティブ環境におけるルーティングソリューション

## Cloud-Native Contrail Networking (CN2)

- クラウドネイティブSDN
- Hybrid / Multicloud
- 既存OpenStack基盤とも連携可能

## Juniper Cloud-Native Router (J-CNR)

- クラウドネイティブ仮想ルータ
- これまでの標準的なvRouterモデルやクラウドネイティブなモデルに対応
- Junosがサポートする豊富なfeature set

どちらのソリューションも既に商用サービス向けに採用済み！



# THANK YOU

JUNiper  
NETWORKS | Driven by  
Experience™