A PERSPECTIVE ON INFRASTRUCTURE SERVICES OUTSIDE THE NETWORKING BUBBLE

NXTWORK2017
JUNIPER CUSTOMER SUMMIT

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Contrailers in the Contrail BU

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WHAT SHOULD YOU BE THINKING ABOUT?

- This session will show you how users of infrastructure services (compute, storage and network) view infrastructure and what do they want from it?
- This perspective is intended to provide a thought process which will assist you in evaluating what technologies should be included in target network architectures.
- One constant is change
- Infrastructure should be reusable, multi-use, agile and agnostic

MACRO TRENDS AROUND INFRASTRUCTURE SERVICES

Cloud Migration

- Custom apps are being built in the Cloud
- Enterprises apps migrating to SaaS

Microservices / Scale-out Apps

- TTM of apps
- App portability & scalability
- Move from monolithic to microservices

OpenSource Adoption

- Proprietary software perceived as ‘vendor lock-in’
- All layers of stack are open-sourced

CLOUD TRENDS

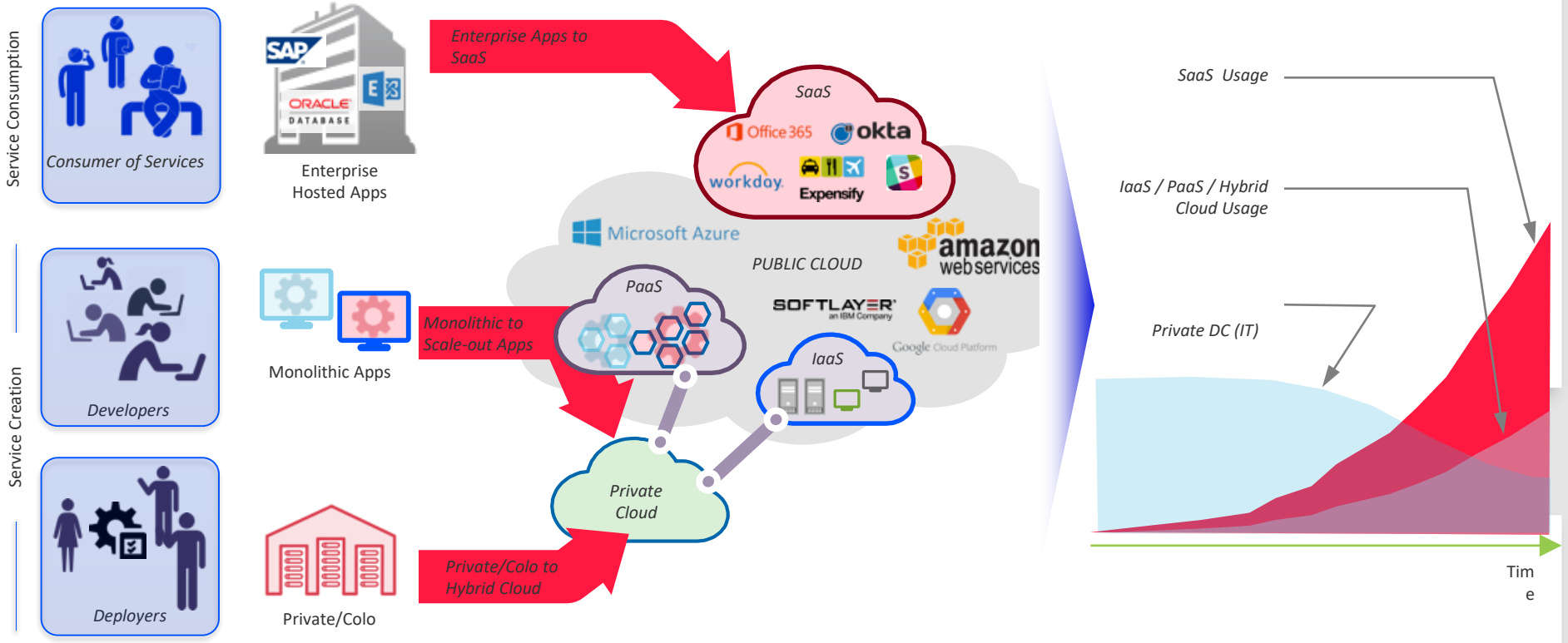
Device Explosion

- Billions of connected / IOT devices
- Running applications in the cloud

Machine Learning & AI

- Device Explosion leads to data explosion
- ML / AI being key to monitor / detect / remediate issues (performance, security, etc.)
- NLP interfaces to devices

DISRUPTION IN ENTERPRISE: MOVE TO CLOUD



LET’S GET A PERSPECTIVE….

WHAT IS THE USER VIEW OF THE POWER GRID?

- Power grid is a black box of infinite capacity
- As long as I have the right plug I can get it anywhere
- If the socket doesn't work, I find another socket
- I don't care how it works as long as it works...

WHAT IS THE USER VIEW OF INFRASTRUCTURE?

- Infrastructure is a black box of infinite capacity
- As long as I have the right plug I can get it anywhere
- If the service isn't easy to get and use, I find another service
- I don't care how it works as long as it works...

WHO AND WHERE ARE THE USERS

- They are not in the network team
- They access applications
- They build applications
- They are applications
- They are anywhere they want to be
- They want what they want now or they go elsewhere to have their needs satisfied

CONTRADICTIONS AMONGST PLAYERS

- Application users just want to use the app and don’t want hurdles in the way (connectivity, security, performance, etc)
- Application developers just want their apps to work and usually just want basic isolation and security gets in the way
- Budget owners want the best bang for the buck and that may complicate everything as their view is infrastructure is like buying other services. Just change vendors to get the best price.

THE TWO MAJOR DRIVERS

User Experience

How can I manipulate infrastructure (compute, storage, networking, security) to address a user experience issue?

Infrastructure cost

Where do I want to place my workloads in relation to my users to optimize for cost in delivering those services?

This will change over time based on cost of services, scale required and application lifecycle

How do we get infrastructure to react to these changes in with minimal effort? Infrastructure is a living component of the application.

MODIFIERS OF THE PRIMARY DRIVERS

Consistent security enforcement and validation independent of how and where something is deployed

- Level of security available via specific infrastructure modifies where you can deploy something

Compliance

- Level of compliance validation modifies where you deploy

Cost per unit of infrastructure against budget

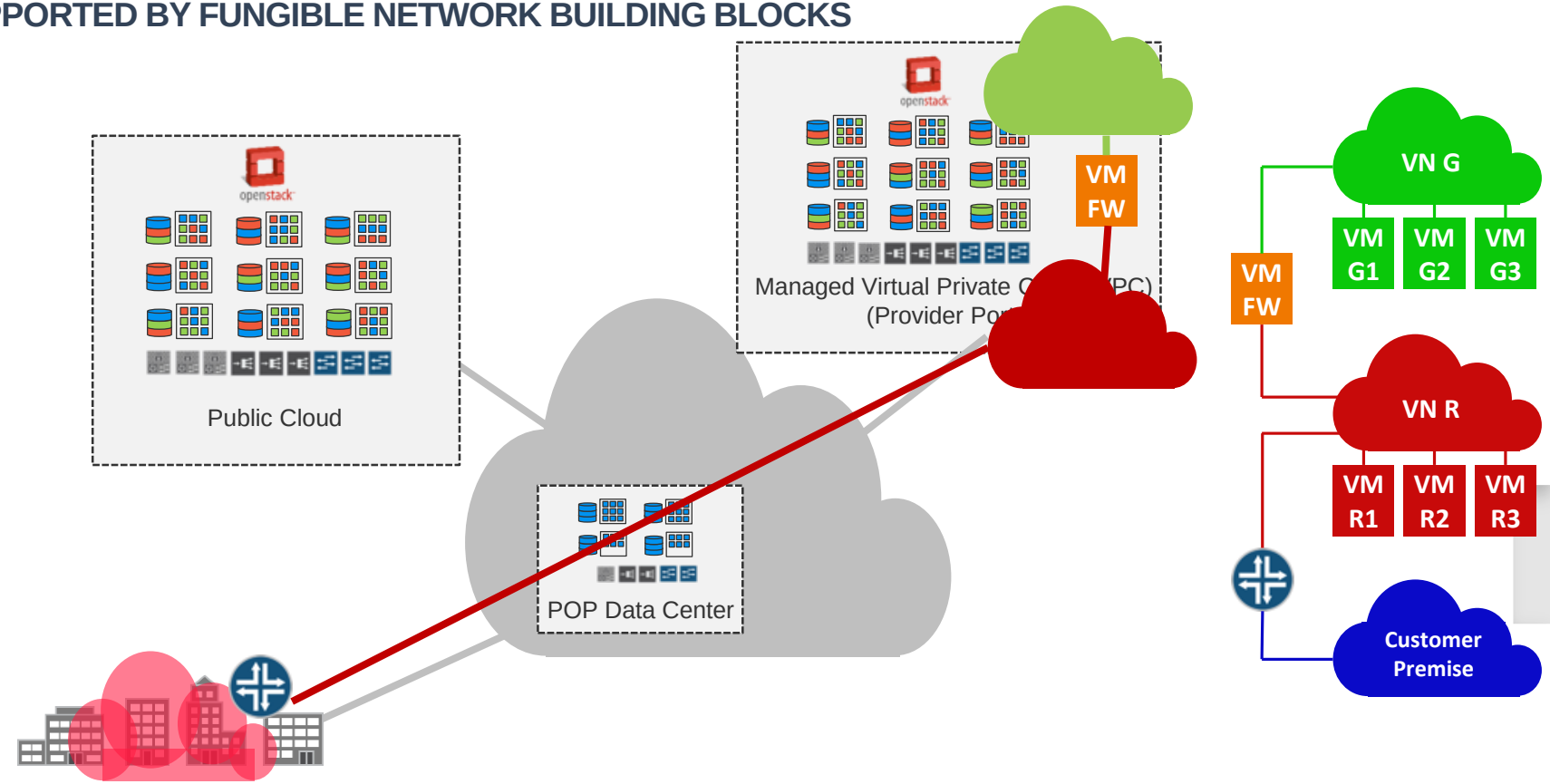
- Modifies service provider allowed and scale

SLA/Perforformance and likely some other modifiers

SO WHAT DOES THE NETWORK NEED TO DO THEN….

DISTRIBUTED COMPUTE SERVICES AS COST LEVER

SUPPORTED BY FUNGIBLE NETWORK BUILDING BLOCKS



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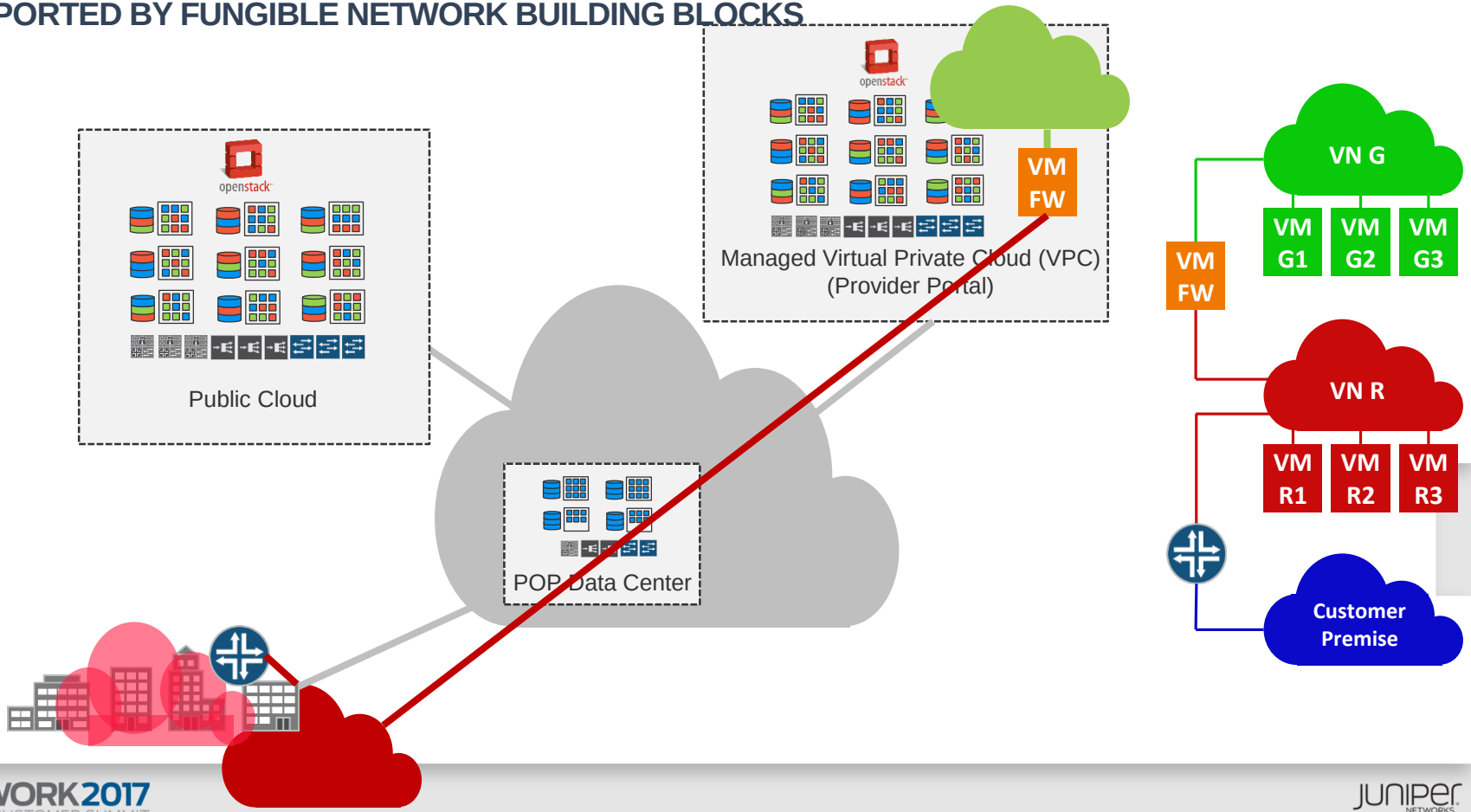

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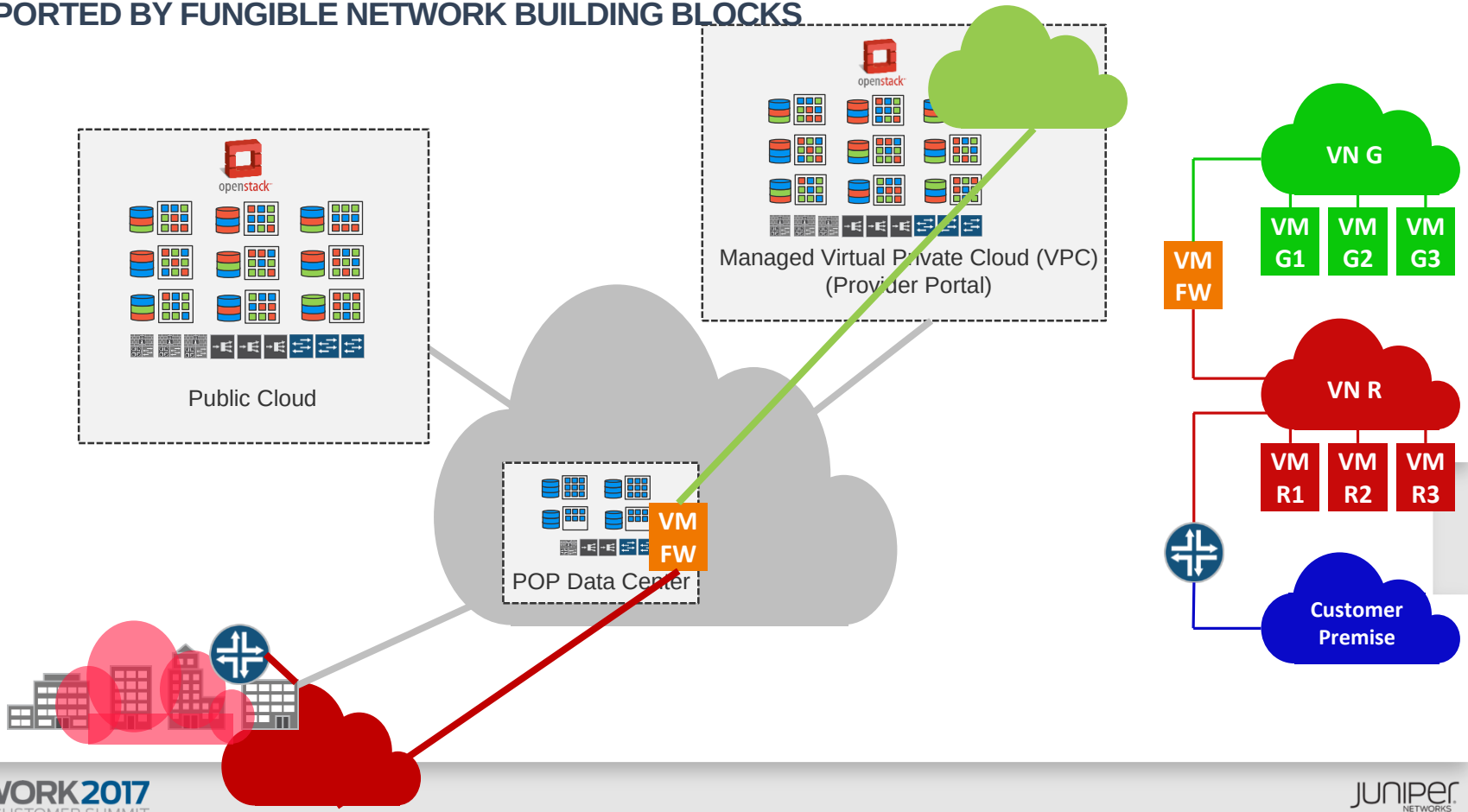

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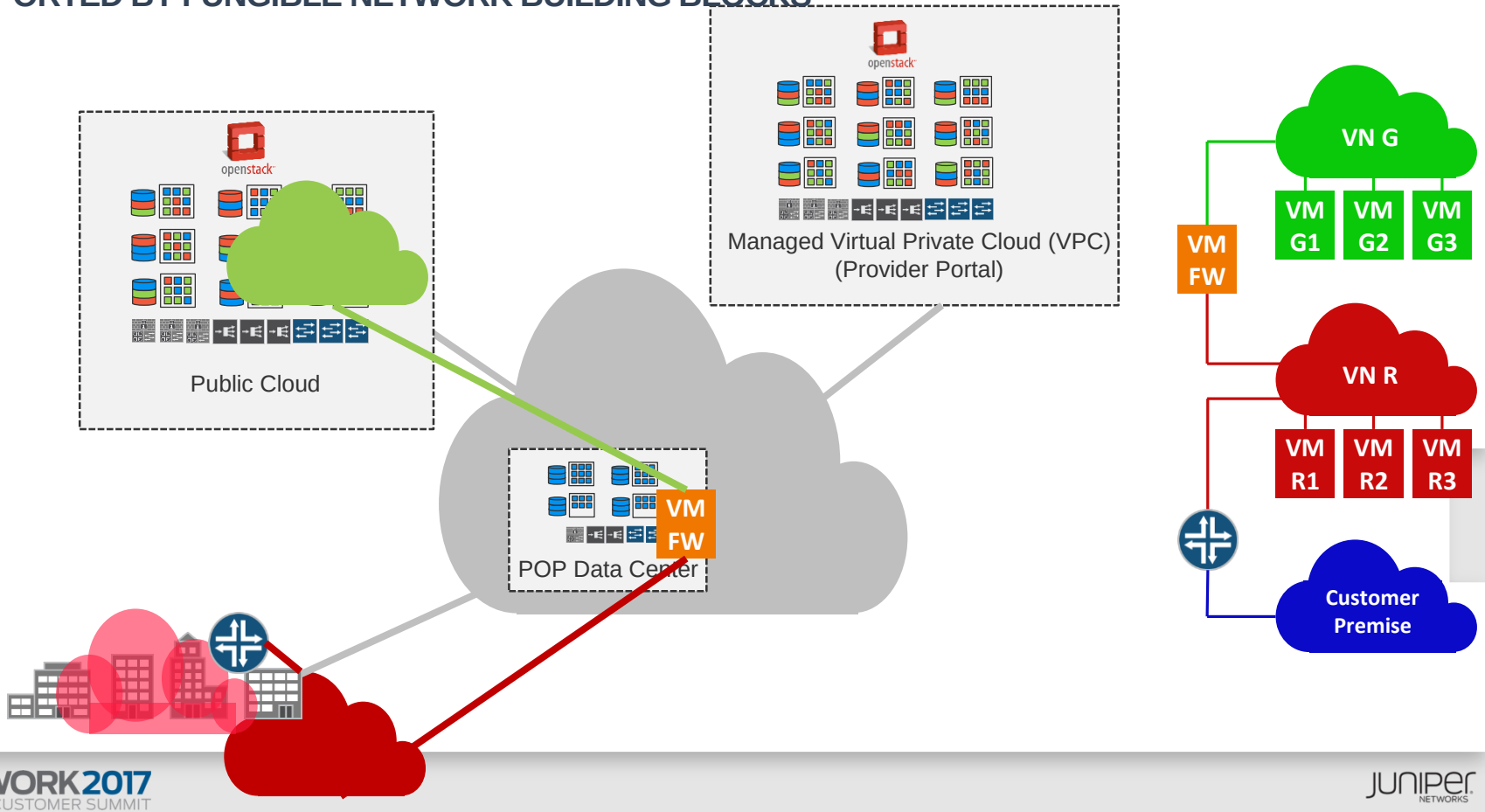

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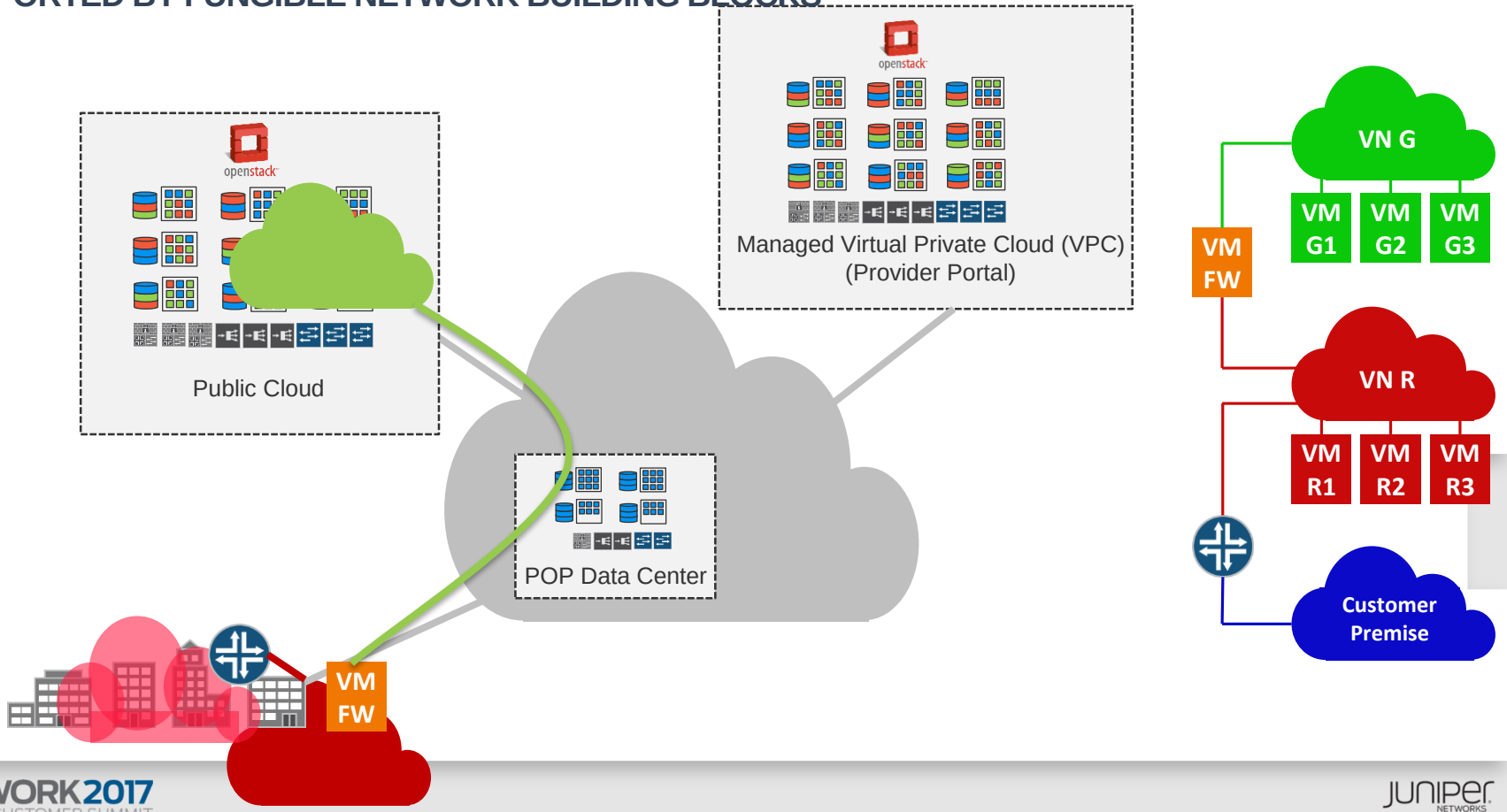


NETWORKS ARE MORE THAN CONNECTIVITY

FUNGIBLE COMPONENT OF THE APPLICATION

People
(Developers, Net Ops, CISO, …)

VISION

Provide Connectivity, Security, and Manageability for:

1. People ← → Apps
2. Apps ← → Apps

Apps
(running in multiple environments)

box workday. Custom Apps …

Manageability & Operations

Security

Connectivity

CPE
Remote Branch Office

IP Fabric
VMs
Containers
BMS
FIREWALL
Multi-site DC / Private Cloud (VMs, BMS, Containers, VNFs)

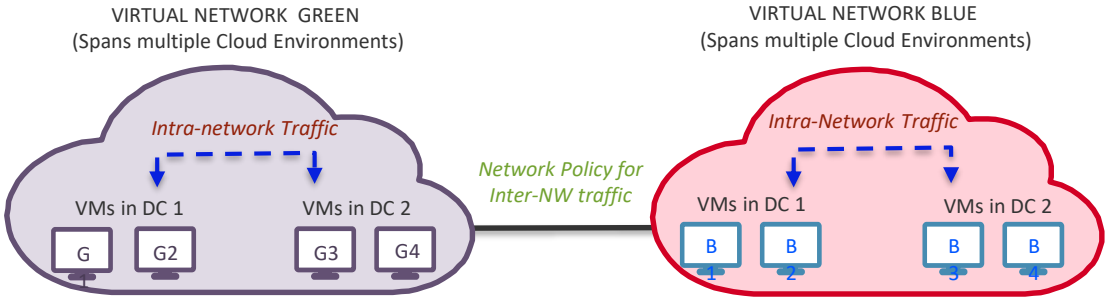
Telco POPs

Google Cloud Platform
amazon web services
Azure
Public Cloud (VPC's)

THE INTERNET of THINGS

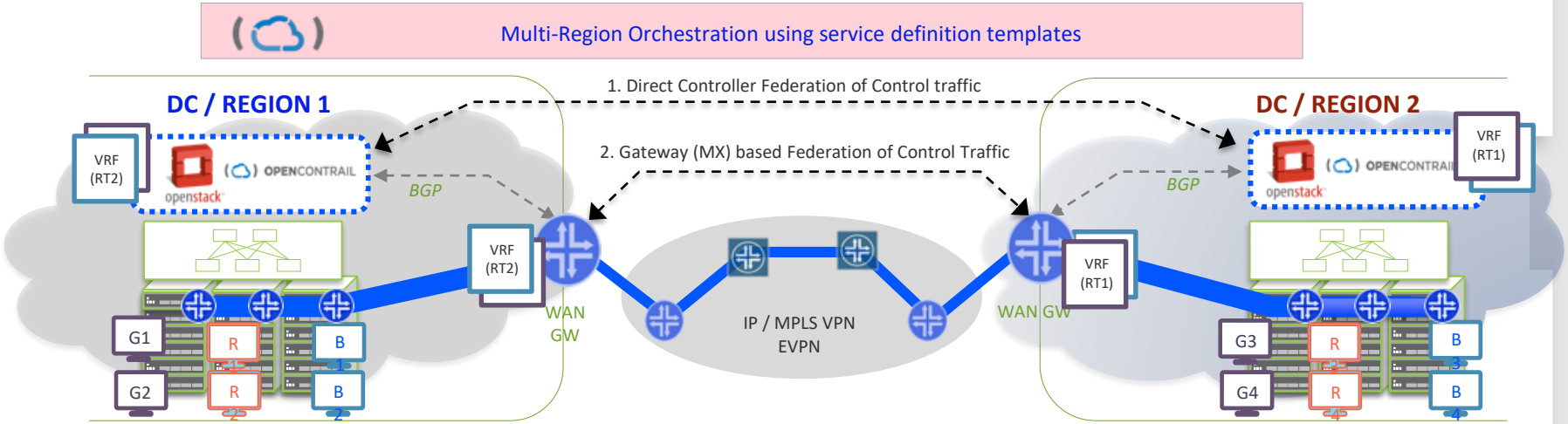
PHYSICAL LOCATION AGNOSTIC

LOGICAL

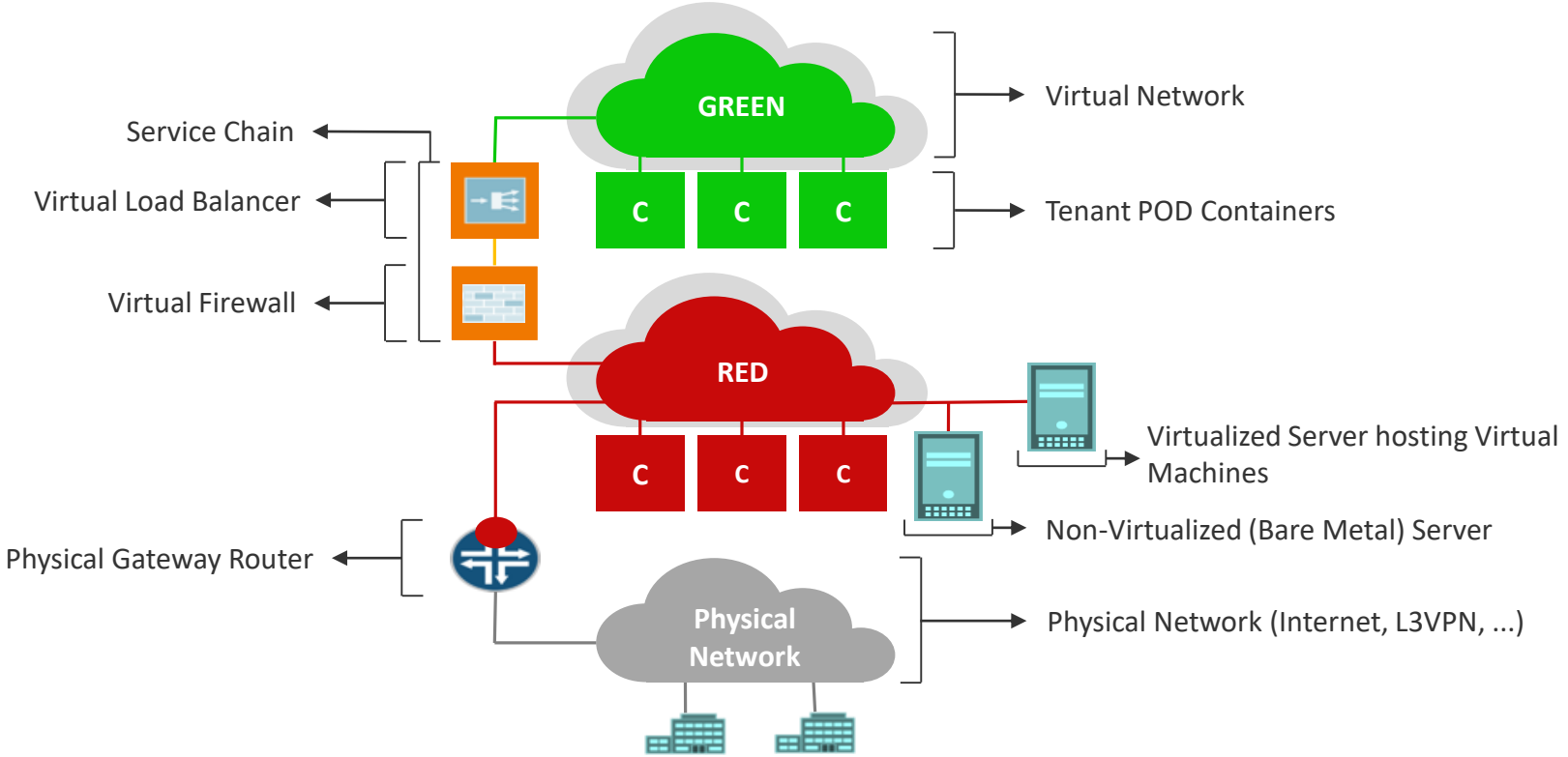


- *VNs span multiple cloud environments (DCs)*
- *Security Policies can span multiple remote data centers*
- *Multiple ways to federate control plane traffic (directly through Controller or Through MX)*
- *Global Controller on top to orchestrate multi-DC clusters*

PHYSICAL

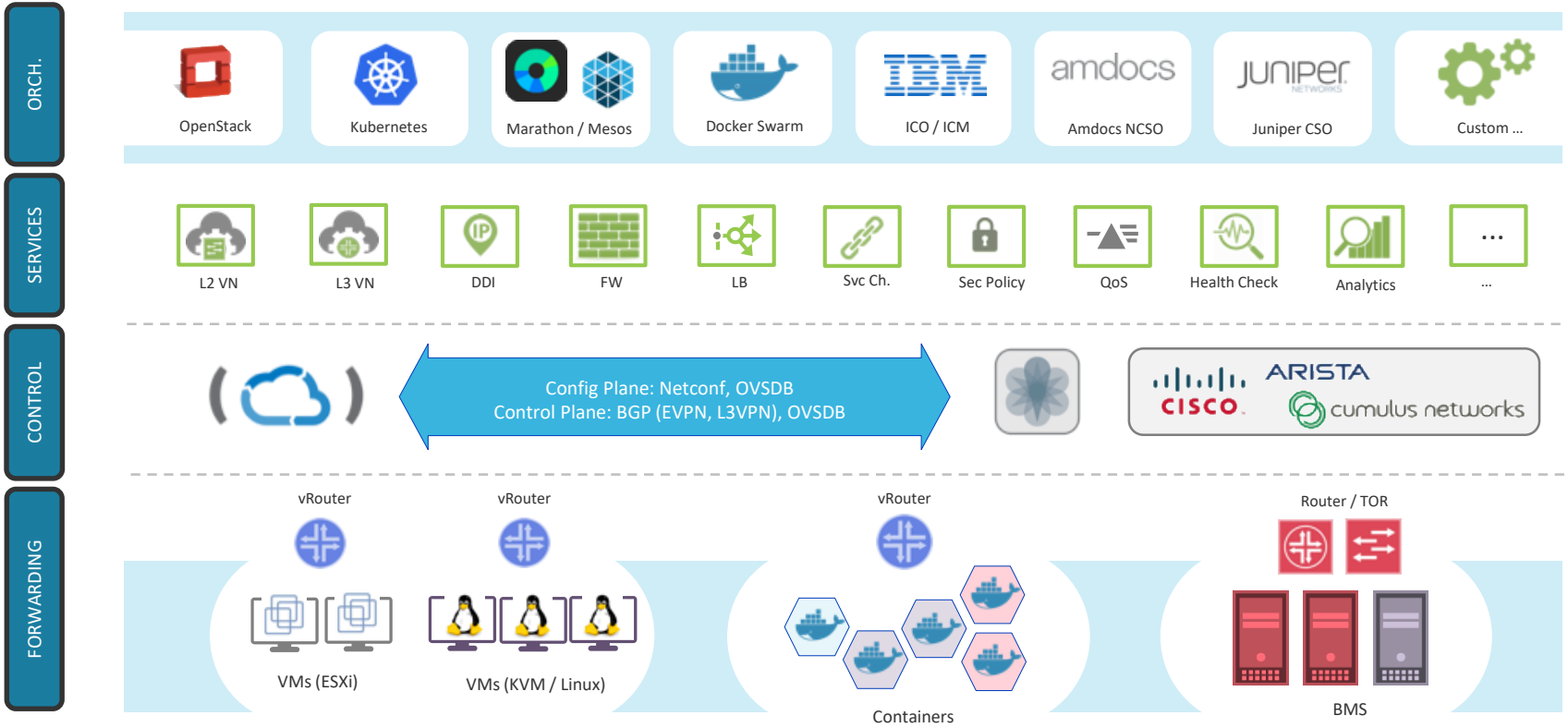


ORCHESTRATION AND WORKLOAD AGNOSTIC



HOW DOES JUNIPER ENABLE THE APPLICATION DRIVEN INFRASTRUCTURE….

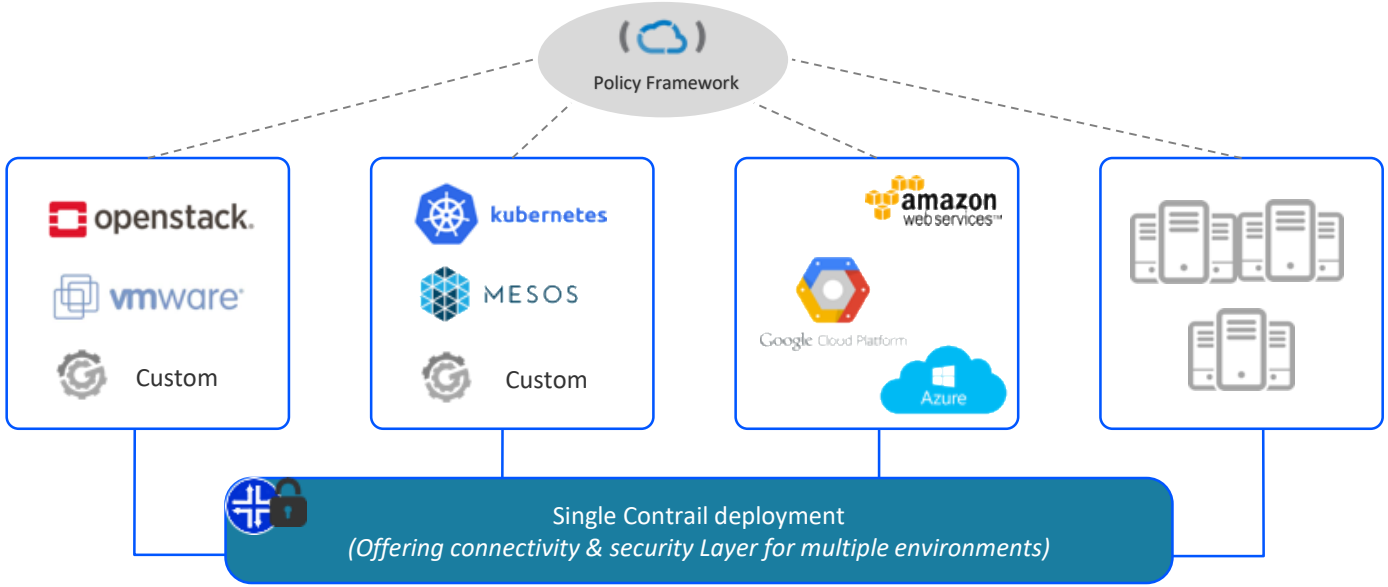
INTENT DRIVEN NETWORK SERVICES



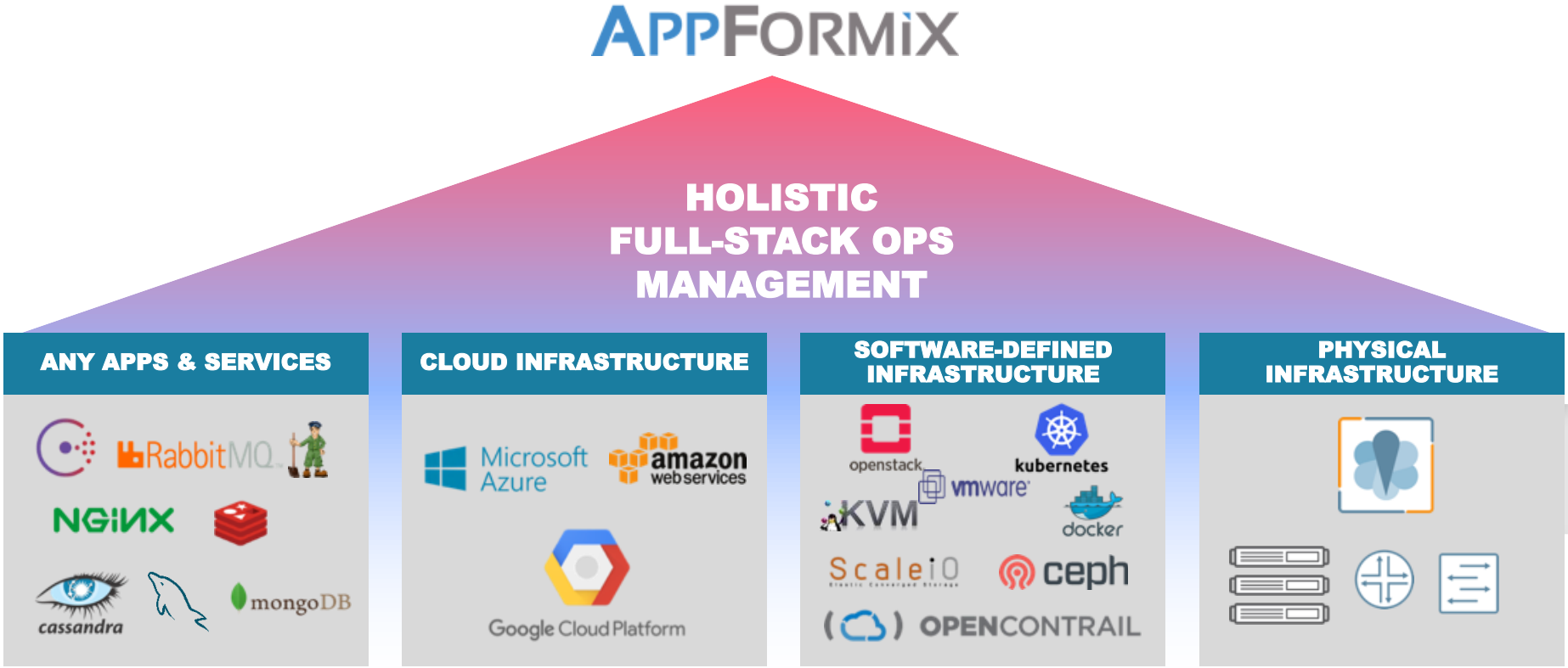
INTENT DRIVEN SECURITY

SINGLE PRODUCT INSTANCE COVERING MULTIPLE ENVIRONMENTS

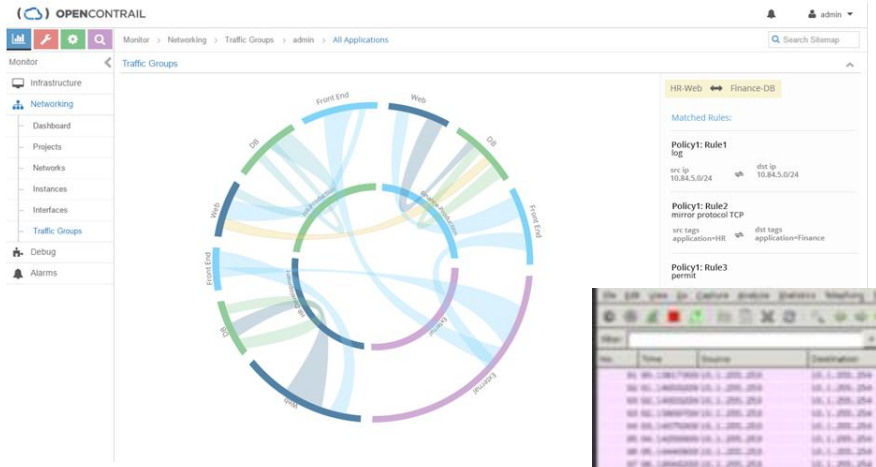
1. **Discovery of topology** and activity within/across application tiers
2. **Centralized security policies** with multiple **distributed enforcement** points (L2-L4, L7 using Host-based firewall)
3. **Single Contrail** deployment providing both **Security & Connectivity** across multiple environments
4. **Visualization for policy definition** (i.e. config) and **SIEM** (i.e. reporting, troubleshooting, app flow discovery, etc.)

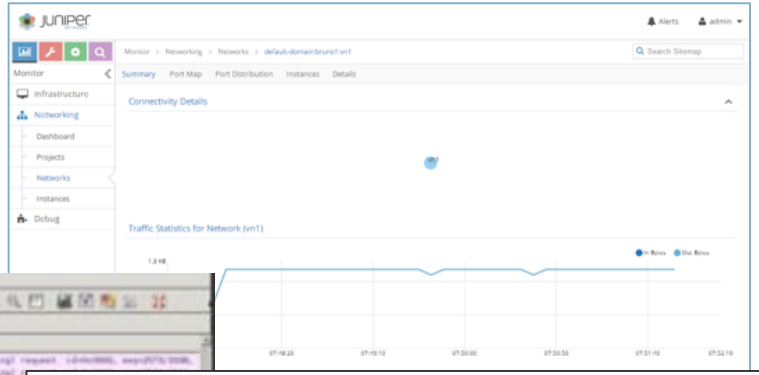


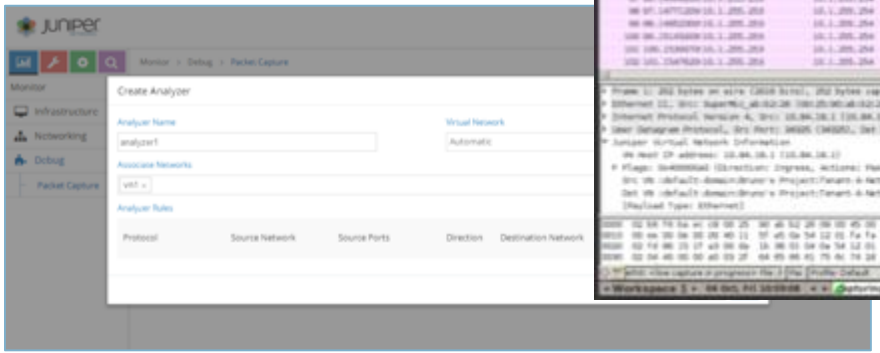
INTENT DRIVEN OPERATIONS

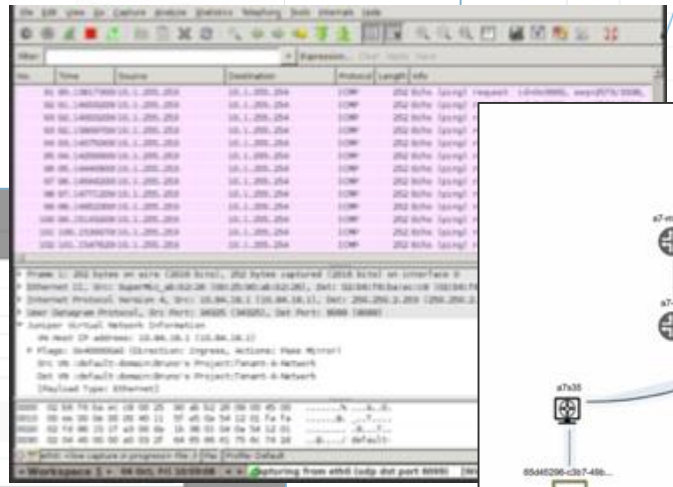


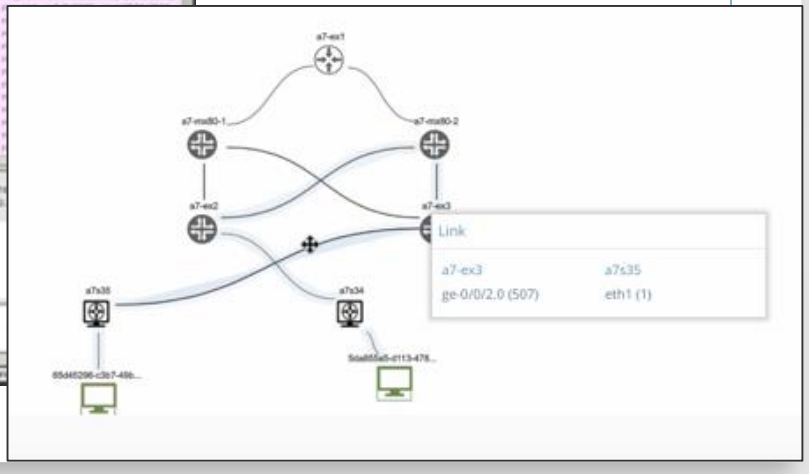
VALIDATION THROUGH ANALYTICS





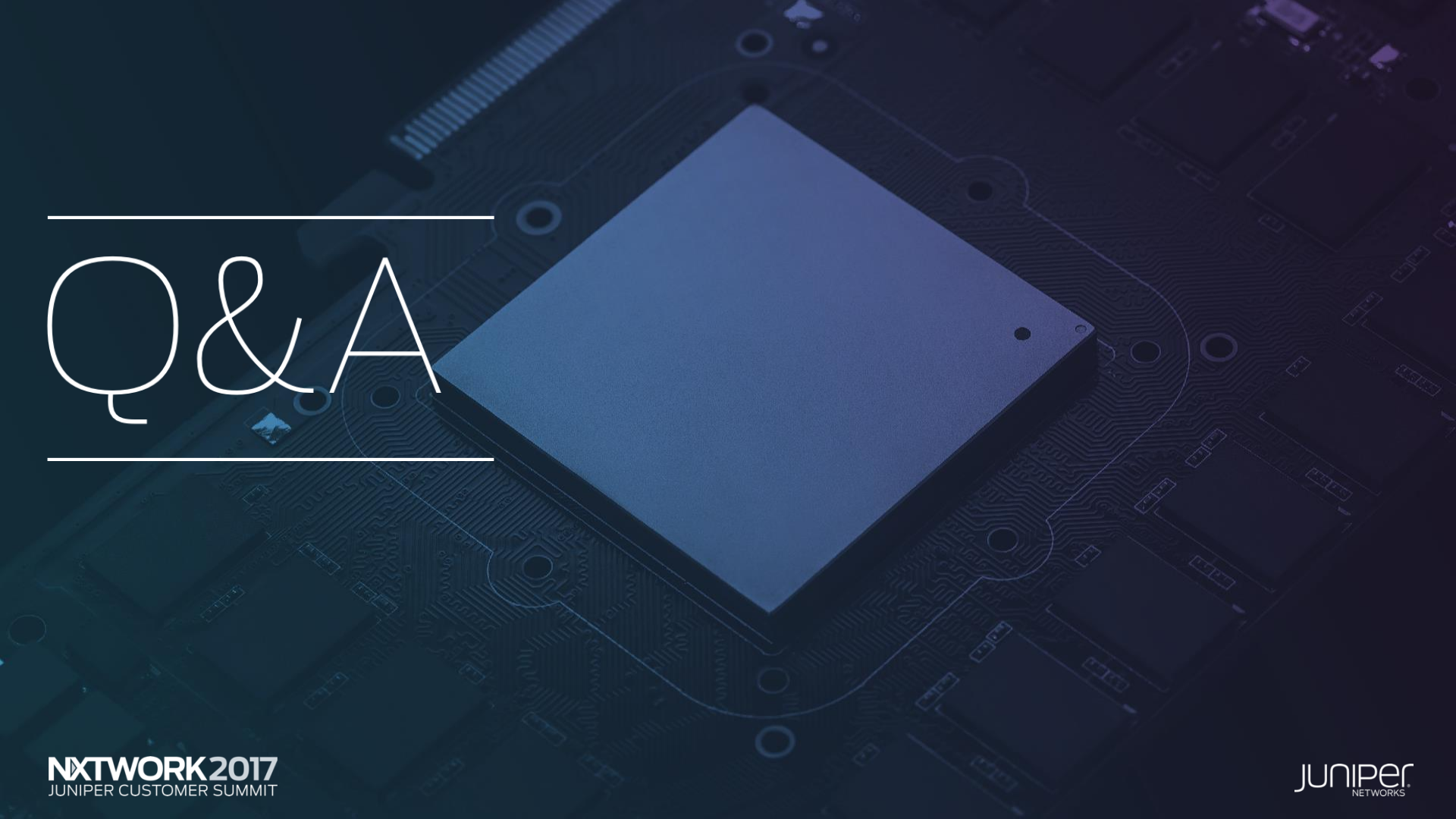






NEXT STEPS….

- Take stock of who your users are
- How do they want to consume resources?
- Do they describe requirements in terms of business metrics?
- What is your expectation of rate change in user requirements and use cases?
- How do you want to provide infrastructure to drive positive user experience and adaptable infrastructure economics?
- What technologies will facilitate this?


Q&A

THANK YOU FOR YOUR KIND ATTENTION