JUNIPER SDN

Orquestração e Inteligência para Data Center, Cloud, Backbone e LAN/WAN

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Systems Engineer

JUNIPER NETWORKS | Engineering Simplicity

AGENDA

- Contrail Enterprise Multicloud (DC e Cloud)
  - Contrail Networking
  - Appformix
  - Contrail Security

- Contrail Service Orchestrator
  - SD-WAN
  - SD-LAN

- Northstar WAN SDN Controller

JUNIPER NETWORKS NAMED A LEADER BY GARTNER

Magic Quadrant for Data Center Networking

We believe Juniper is recognized for:

- Having a deep portfolio of hardware and software solutions
- Leading with automated, open and standards-based approaches

"Juniper is confident in the execution and strategy that we believe is being recognized by various analysts."

-Rami Rahim, CEO, Juniper Networks

Gartner, Inc., Magic Quadrant for Data Center Networking, Andrew Lerner, Joe Skorupa. 11 July 2018.

This graphic was published by Gartner, Inc. as part of a larger research document and should be evaluated in the context of the entire document. The Gartner document is available upon request from Juniper Networks.

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AI-DRIVEN ENTERPRISE - IT'S SOFTWARE-DEFINED

1. Software-defined: Orchestrates smarter operations for any scale of architecture

SOFTWARE-DEFINED EVOLUTION

PUBLIC CLOUD DATA CENTER WAN BRANCH CAMPUS

Conquer Scale and Automation

Master Simplicity and Smart

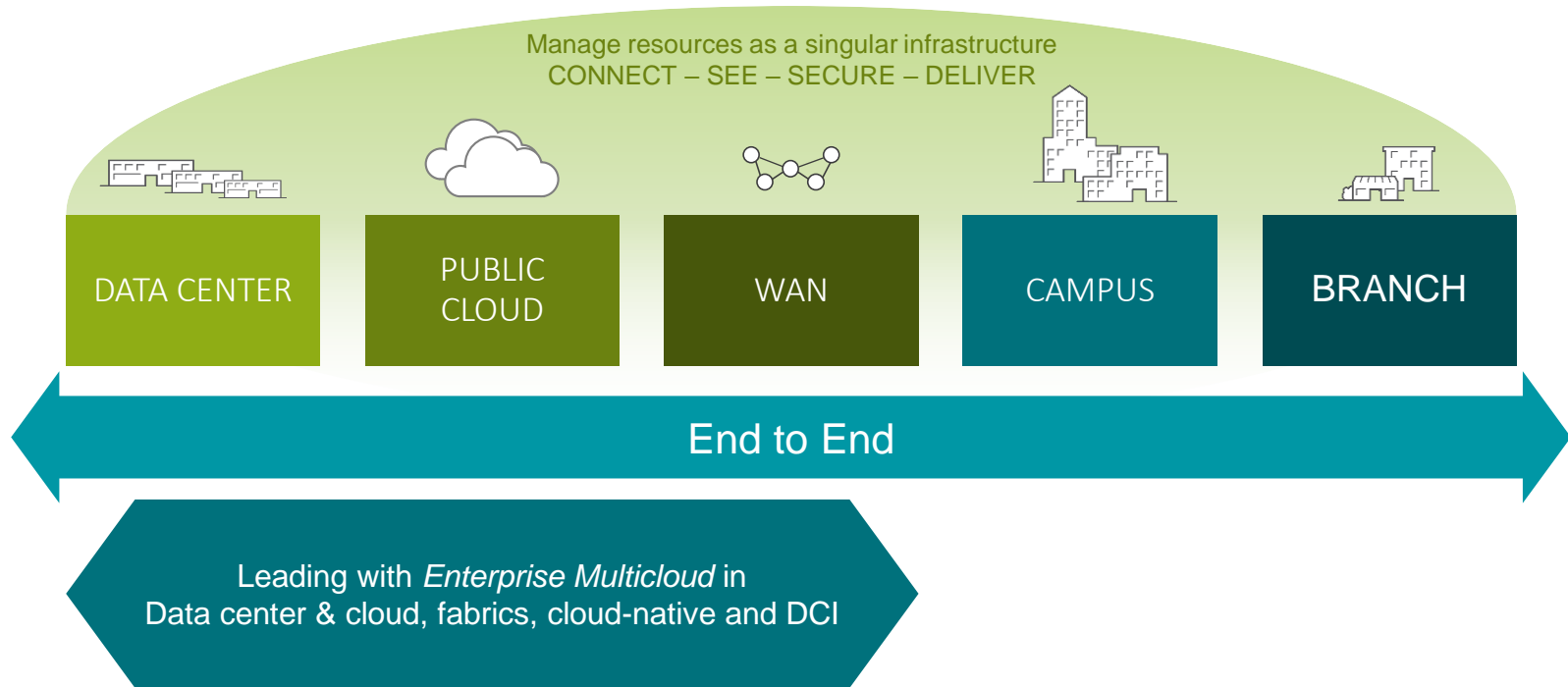Centralized orchestration of ops produces reliability and agility

Abstract control and automate workflows with APIs and GUIs for visibility

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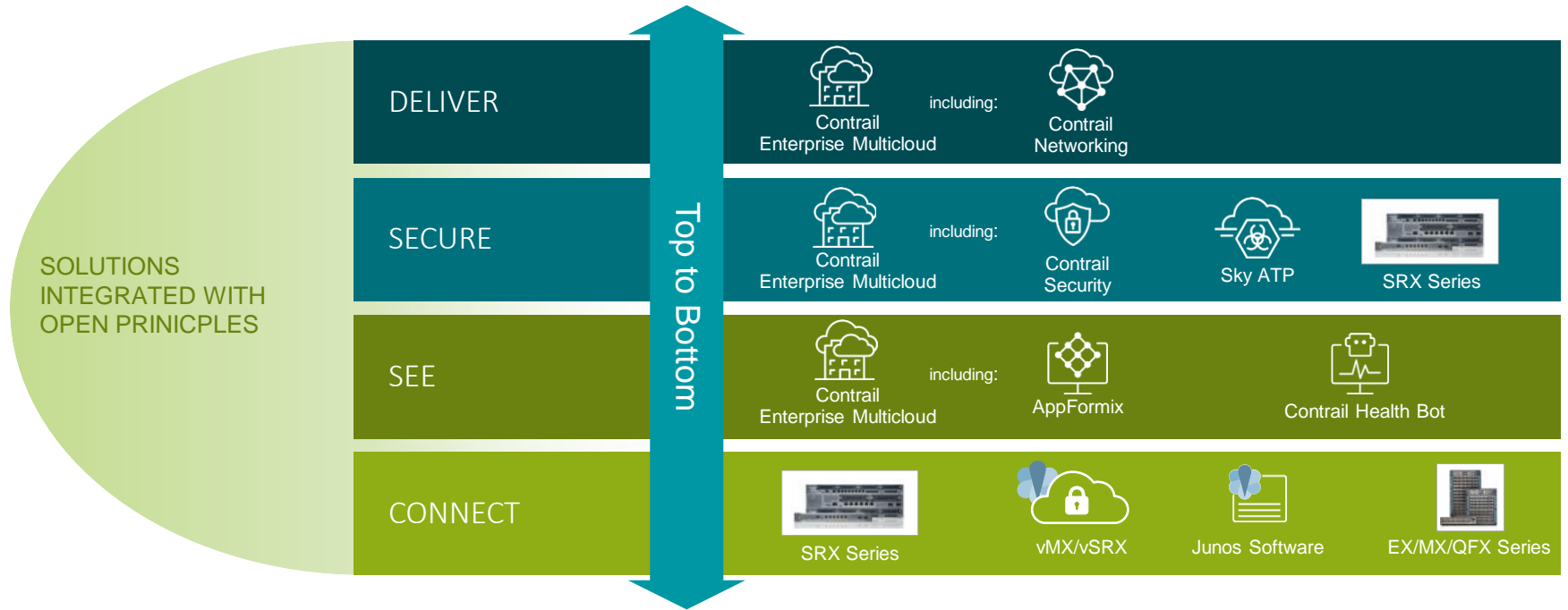# CONTRAIL ENTERPRISE MULTICLOUD

Cloud & Data Center

ENTERPRISE MULTICLOUD – IT'S END TO END

Manage resources as a singular infrastructure
CONNECT – SEE – SECURE – DELIVER

| DATA CENTER | PUBLIC CLOUD | WAN | CAMPUS | BRANCH |

End to End

Leading with *Enterprise Multicloud* in
Data center & cloud, fabrics, cloud-native and DCI

ENTERPRISE MULTICLOUD– IT'S TOP TO BOTTOM

SOLUTIONS
INTEGRATED WITH
OPEN PRINICPLES

Top to Bottom

DELIVER

Contrail
Enterprise Multicloud

including:

Contrail
Networking

SECURE

Contrail
Enterprise Multicloud

including:

Contrail
Security

Sky ATP

SRX Series

SEE

Contrail
Enterprise Multicloud

including:

AppFormix

Contrail Health Bot

CONNECT

SRX Series

vMX/vSRX

Junos Software

EX/MX/QFX Series

CONTRAIL ENTERPRISE MULTICLOUD

Contrail Enterprise Multicloud

Any Cloud

Private cloud data centers, public cloud and VMware private clouds

Any Workload

Bare metal servers, public cloud instances, virtual machines, containers and physical networking devices

Any Deployment

Greenfield or brownfield, single- or multivendor

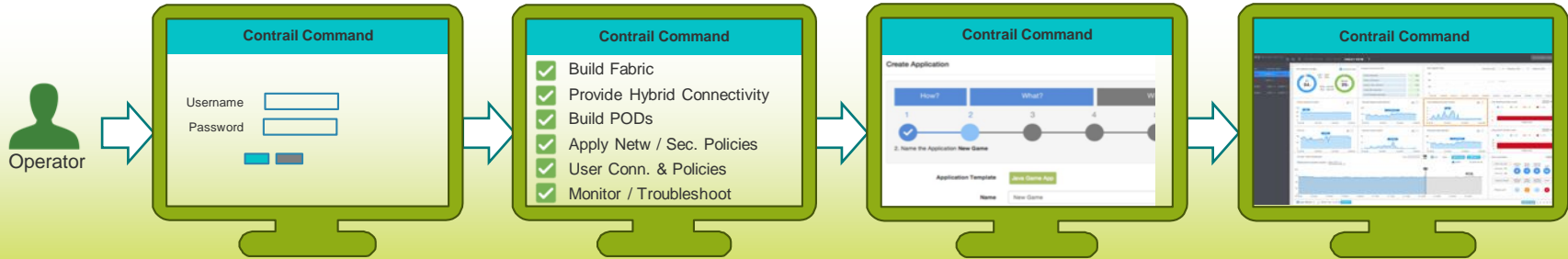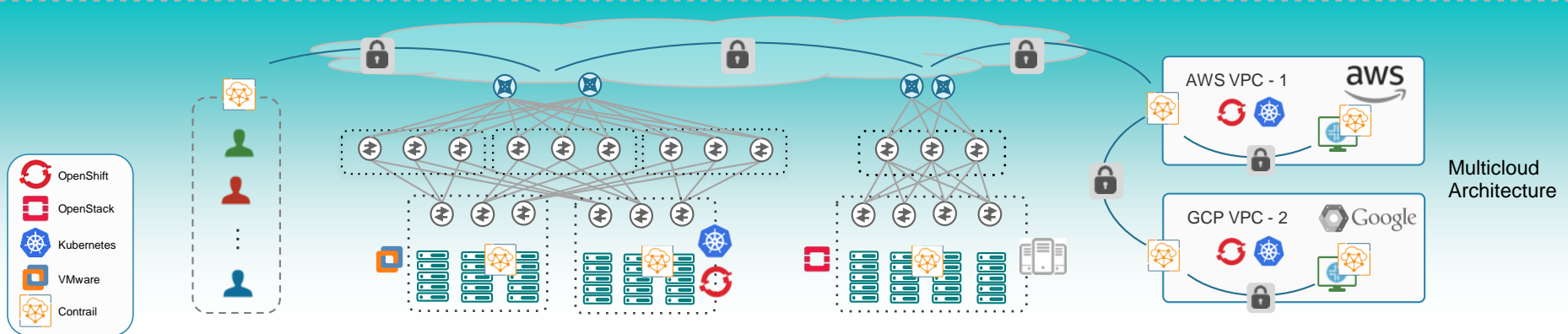One, open platform for end to end policy and control with analytics

OLD MAN YELLS AT CLOUD

CONTRAIL ENTERPRISE MULTICLOUD

Shifting multi location complexity into one interface.

Multicloud Architecture

CONTRAIL PRODUCTS

Contrail Security - Policy Orchestration & Enforcement across multiple clouds

Appformix - Monitor & Operate Cloud

Contrail Networking

Virtual Networking: Virtual Networking / Overlay software for connectivity for VM/Containers

Fabric Automation: Management of DC devices and servers/BMS (underlay and overlay automation) to extend connectivity (i.e. virtual networking) to physical workloads (BMS, CE)

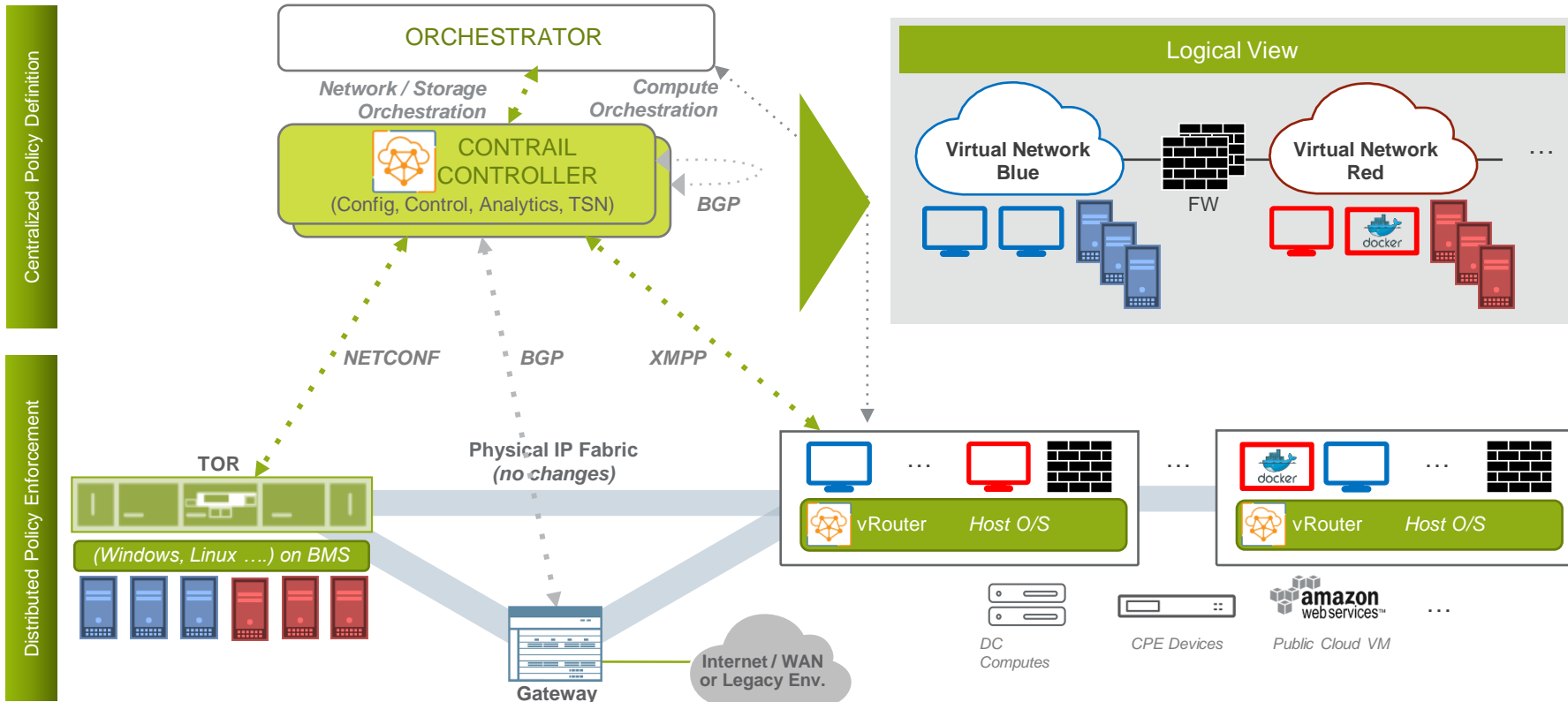**Multicloud Automation**: Extension of virtual networking across Data Centers/Private clouds and to Public Cloud

Contrail Enterprise Multicloud
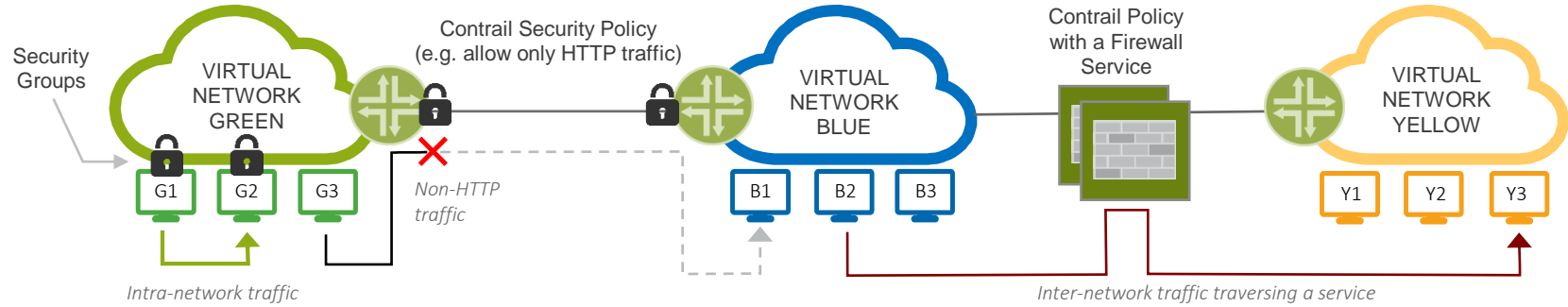(includes Contrail Networking, Contrail Security & Appformix)

Contrail Cloud
(includes Contrail Networking & Contrail Security & Appformix)

Users

Telco POPs

Private Cloud DC

Public Cloud VPC
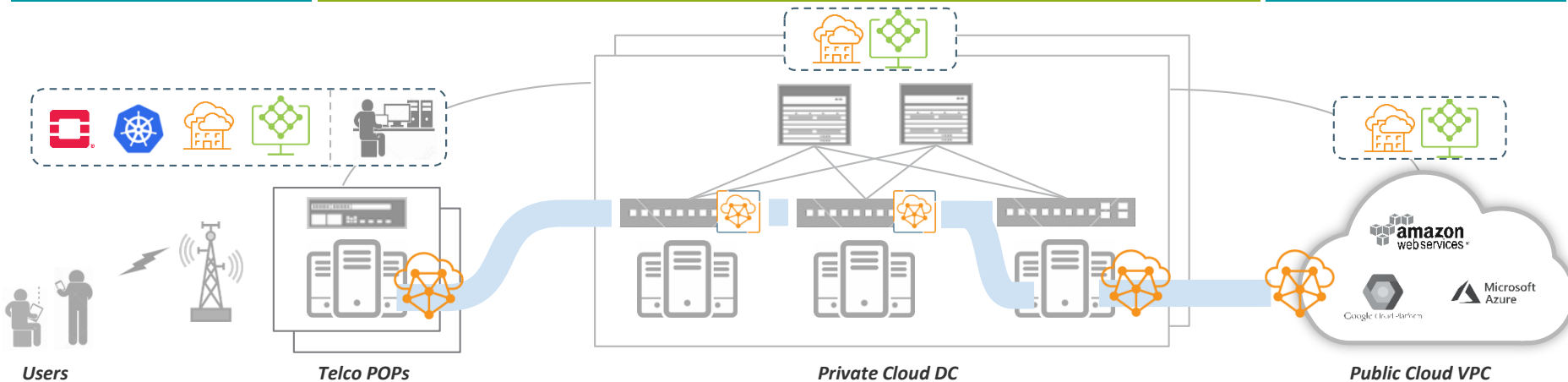
CONTRAIL ARCHITECTURE

VISUALIZING CONTRAIL'S OPERATIONAL EFFECTS

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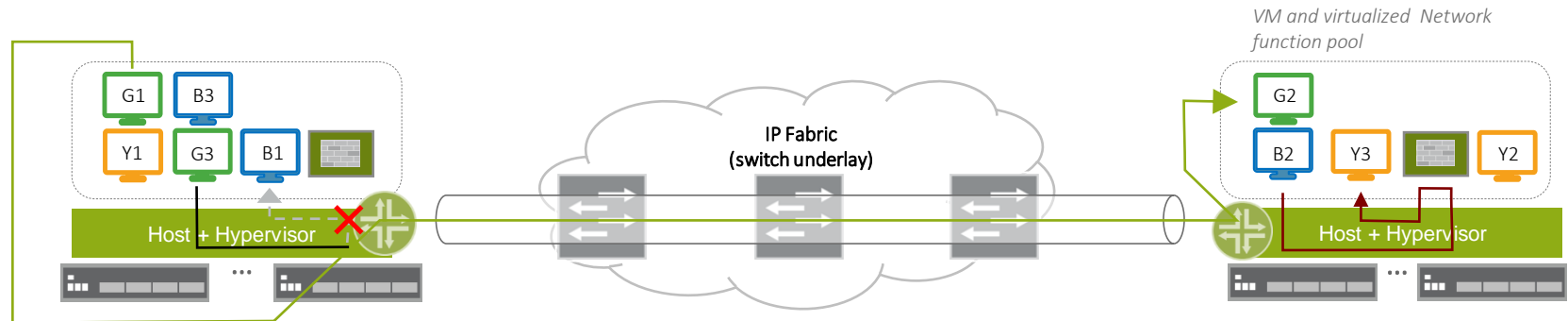
SECURE – CONTRAIL SECURITY

Contrail Enterprise Multicloud

openstack.

vmware®

CUSTOM

kubernetes

OPENSHIFT
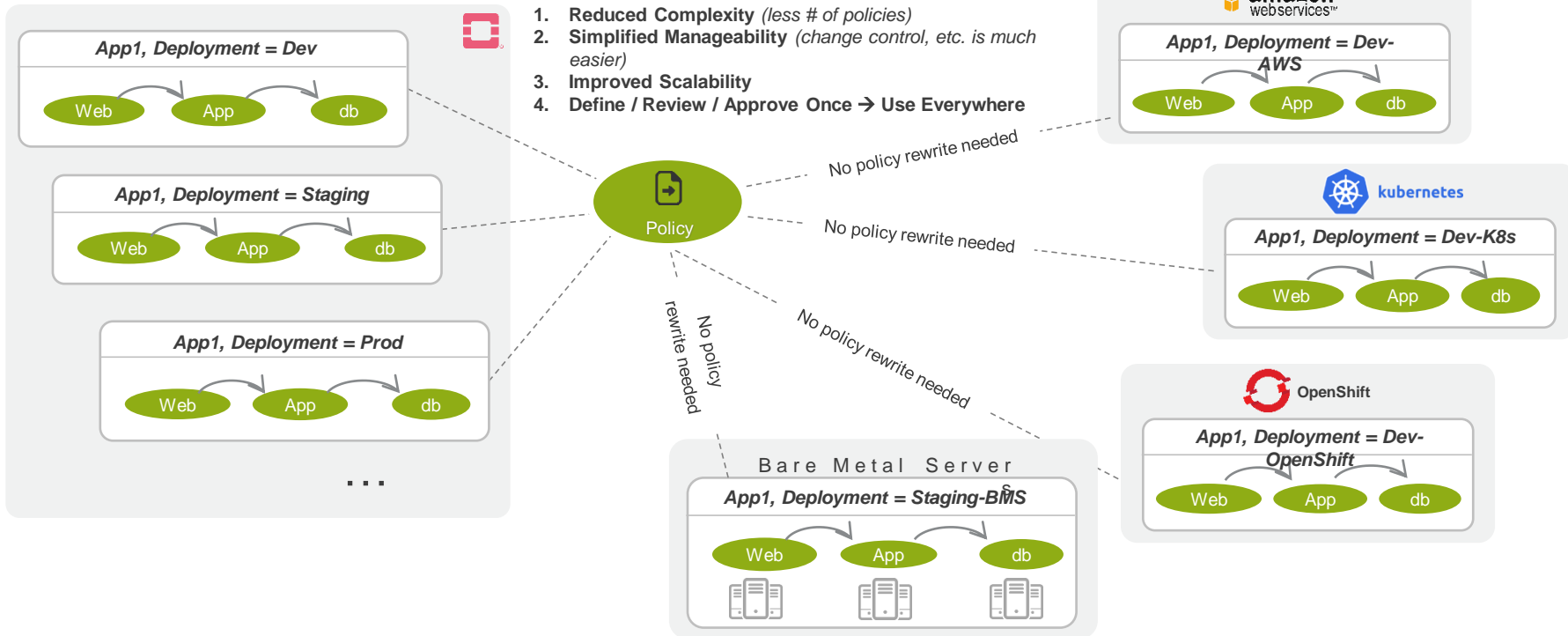
CUSTOM

aws

Azure

Google Cloud Platform

IBM Cloud

Single SDN / Security Deployment

Consistent security for multiple environments
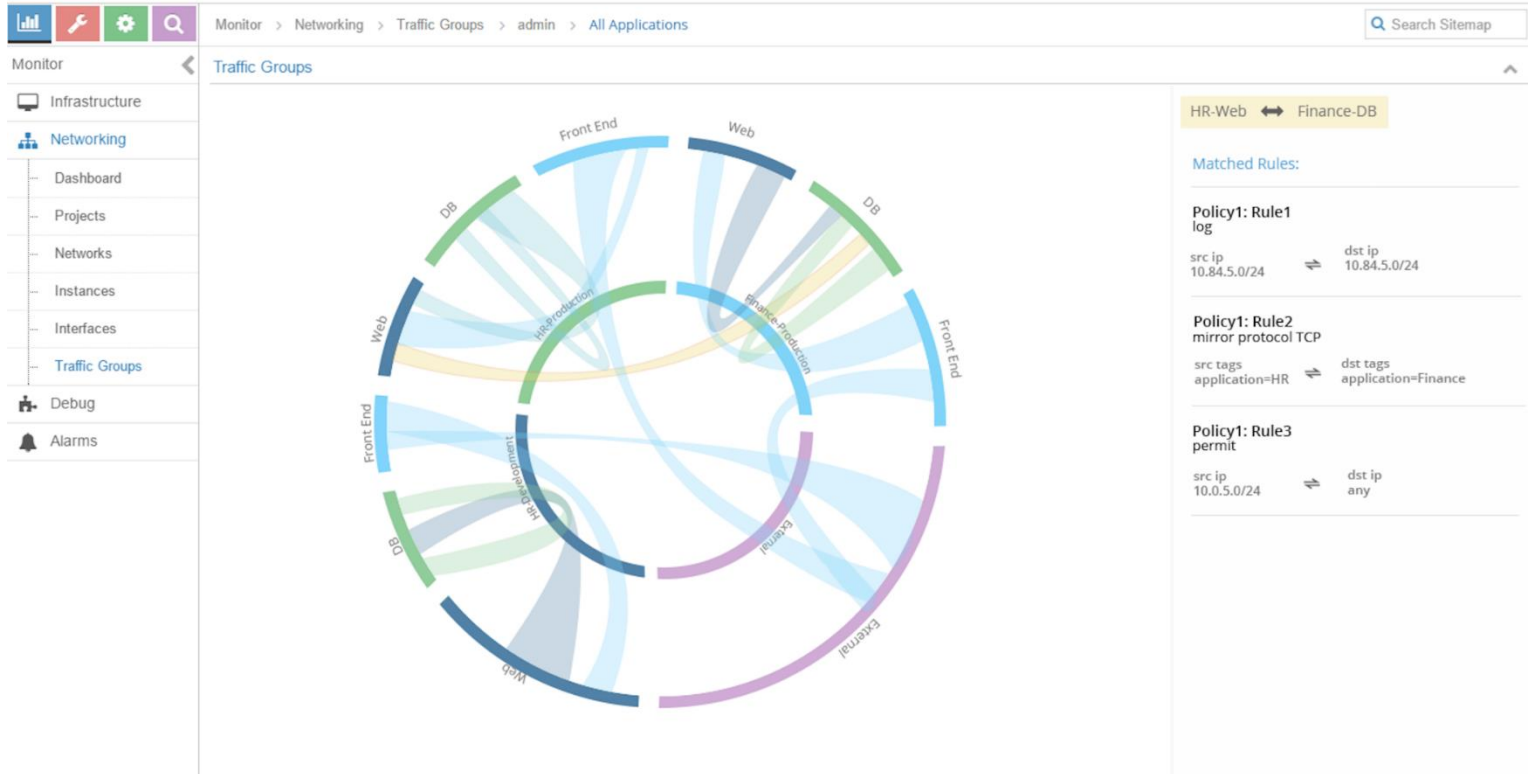
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POLICY OPTIMIZATION
WRITE ONCE – DEPLOY MANY

Once a set of policies are defined for a particular OpenStack environment, they can easily be re-used for other environments?

1. **Reduced Complexity** *(less # of policies)*
2. **Simplified Manageability** *(change control, etc. is much easier)*
3. **Improved Scalability**
4. **Define / Review / Approve Once → Use Everywhere**

App1, Deployment = Dev

Web   App   db

App1, Deployment = Staging

Web   App   db

App1, Deployment = Prod

Web   App   db

. . .

Policy

amazon webservices™

App1, Deployment = Dev-AWS

Web   App   db

No policy rewrite needed

kubernetes

App1, Deployment = Dev-K8s

Web   App   db

No policy rewrite needed

No policy rewrite needed

OpenShift

App1, Deployment = Dev-OpenShift

Web   App   db

No policy rewrite needed

Bare Metal Servers

App1, Deployment = Staging-BMS

Web   App   db

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POLICY & FLOW VISUALIZATION

SEE - APPFORMIX

Contrail Enterprise Multicloud

APPLICATION & SERVICES

CLOUD INFRASTRUCTURE

SOFTWARE DEFINED INFRASTRUCTURE

PHYSICAL INFRASTRUCTURE

Single operations platform to monitor all layers of the infrastructure

DC DEVICES ANALYTICS - SFLOW, JTI, SNMP
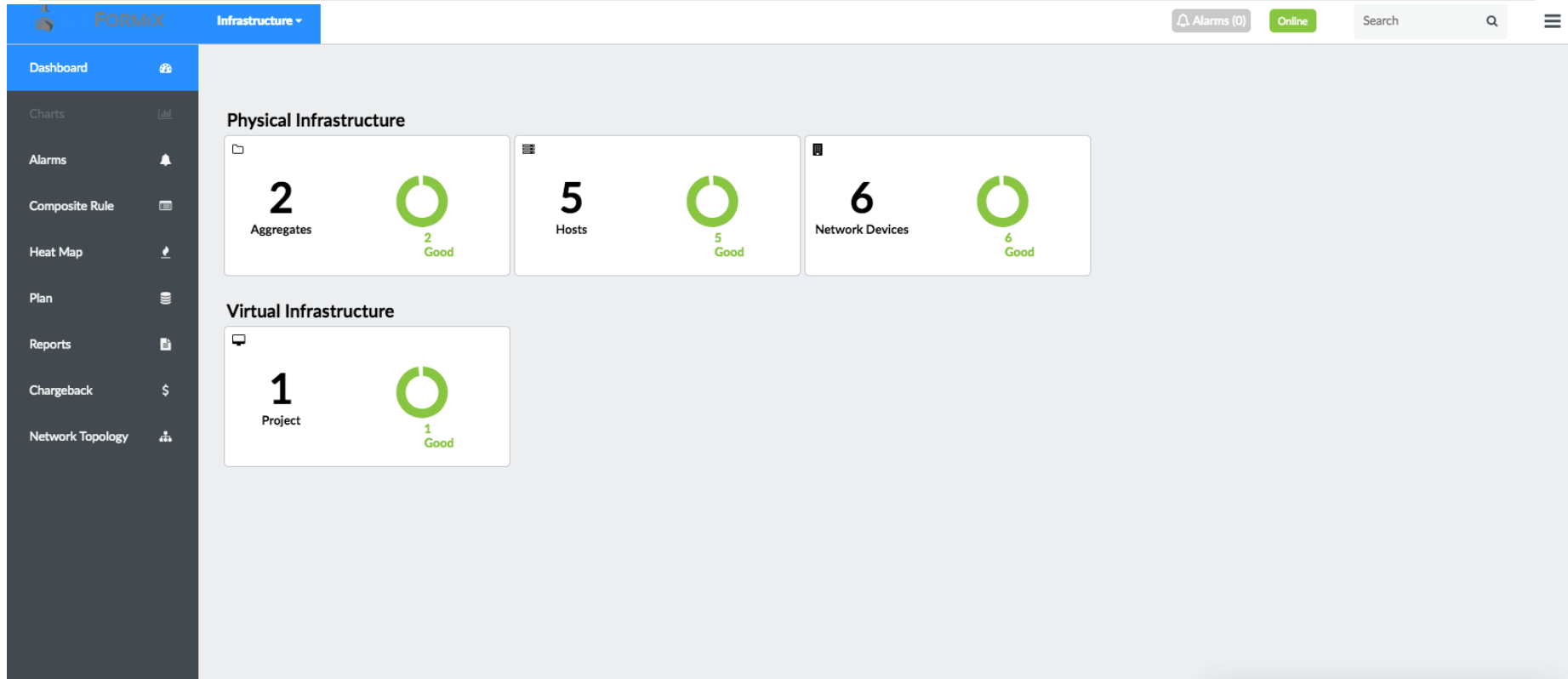
CONTRAIL SERVICE ORCHESTRATOR

SD-WAN / SD-LAN

AI-DRIVEN ENTEPRISE – IT'S TOP TO BOTTOM

SOLUTIONS INTEGRATED WITH OPEN PRINICPLES

Top to Bottom

DELIVER

Mist · Contrail SD-WAN

SECURE

Mist · Contrail SD-WAN · Sky ATP · NFX & SRX Series

SEE

Mist · Contrail SD-WAN · Contrail Health Bot

CONNECT

Mist · NFX & SRX Series in Contrail SD-WAN · vMX/vSRX · Junos Software · EX/MX Series

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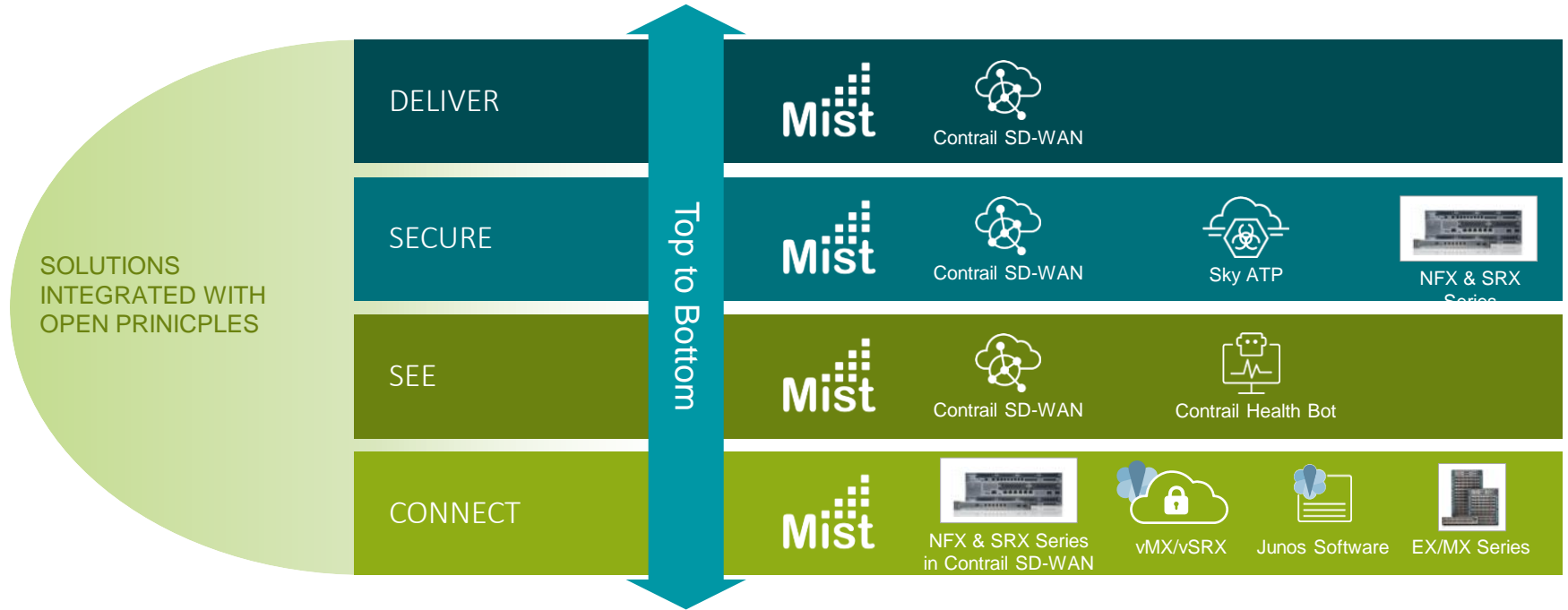
CONTRAIL SD-WAN SOLUTION FOR ENTERPRISE BRANCH

Contrail SD-WAN

Enterprise Sites

LAN & WLAN devices

new Mist Wi-Fi APs

new EX Series Ethernet Switches

WAN Edge Devices

vSRX · · · WANx

NFX Series universal CPE

LTE

SRX Series Services Gateway
Branch Secure CPEs

LTE

Enterprise Branch

MX/SRX WAN Edge

Campus
Enterprise Sites

Private Clouds,
Data Centers

Enterprise Sites

Dedicated,
MPLS

Broadband,
Internet

Wireless,
4G/LTE

Legacy and
xDSL

Private or SP's
WAN backbone

Contrail Service Orchestration (SDN)   MX/SRX WAN Hubs for large topologies

SP managed or Juniper aaS offering **new**

SaaS Applications:
Salesforce, gSuite, Office 365

vSRX Virtual Firewall
orchestrated cloud-WAN
endpoint

new

zscaler

IaaS, PaaS:
VPCs for lift & shift or cloud-native apps

Public Cloud

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NORTHSTAR SDN CONTROLLER

WAN MPLS SDN Controller

NORTHSTAR MODES : CONTROLLER AND PLANNER

NorthStar-Controller (PCE)
Topology Discovery
LSP Control/Modification

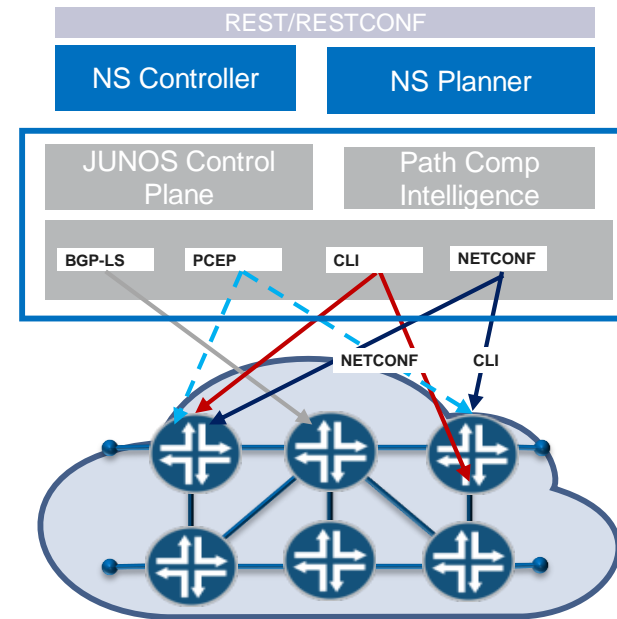| NorthStar-Planner |
|---|
| MPLS capacity planning |
| Exhaustive Failure Analysis |
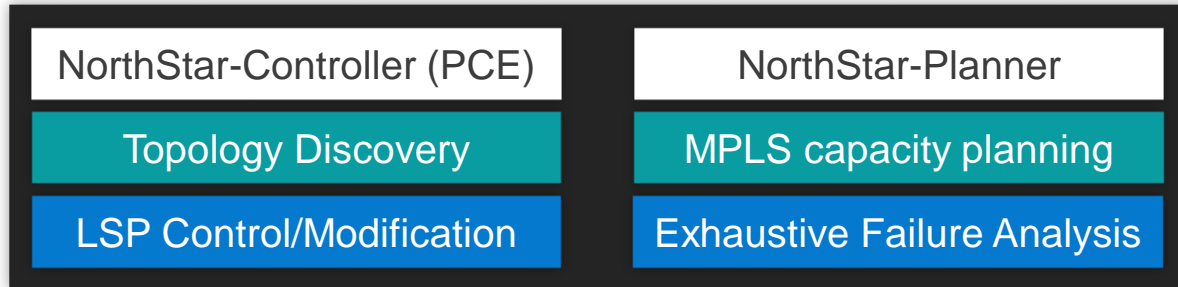
REAL-TIME NETWORK FUNCTIONS

- Dynamic Topology updates via BGP-LS / IGP-TE
- Dynamic LSP state updates via PCEP
- Real-time modification of LSP attributes via PCEP (ERO, B/W, pre-emption, …)
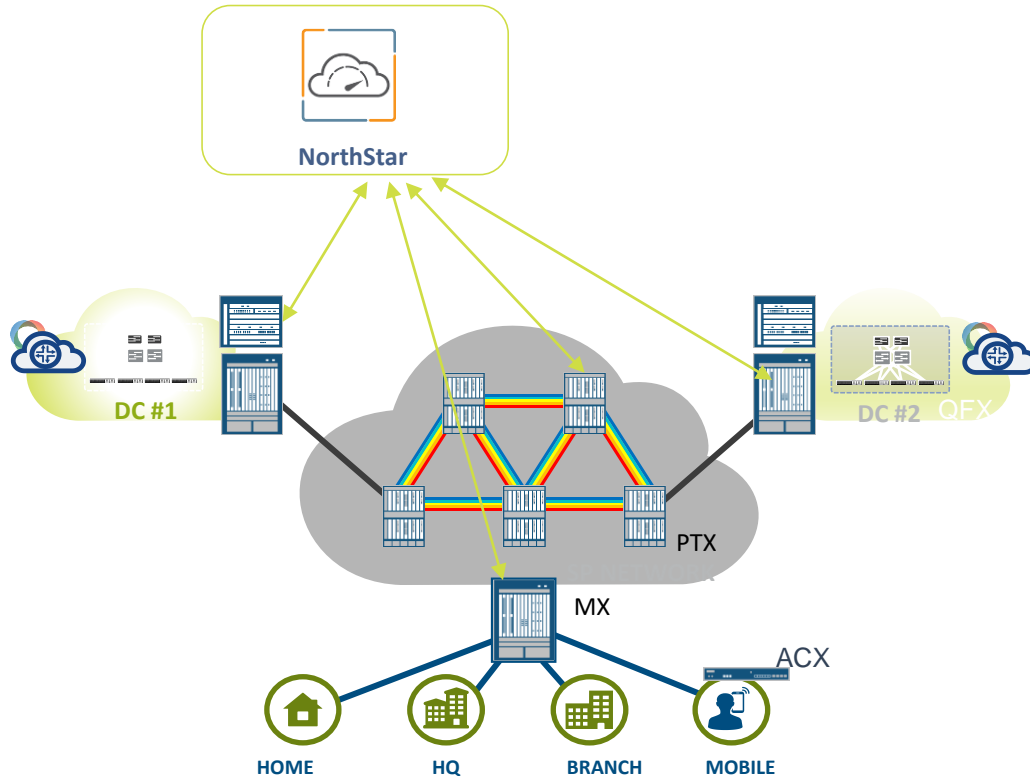
MPLS LSP PLANNING & DESIGN

- Topology acquisition via NorthStar-PCE (snapshot)
- LSP provisioning via REST API
- Exhaustive failure analysis & capacity planning for MPLS LSPs
- MPLS LSP design (P2MP, FRR, JUNOS config'let, …)

REST/RESTCONF

NS Controller

NS Planner

JUNOS Control Plane

Path Comp Intelligence

BGP-LS   PCEP   CLI   NETCONF

NETCONF   CLI

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LIST OF USE-CASES

Enables Agility in Core Transport

- Real-time Topology & LSP Visualization
- Bandwidth Calendaring
- Path Diversity
- Coordinated Maintenance
- Traffic based Network Wide Optimization
- Segment Routing
- Multi-layer PCE
- Network Planning

NorthStar

DC #1

DC #2 QFX

PTX

MX

ACX

HOME   HQ   BRANCH   MOBILE

RESUMO

- Multicloud proporciona a agilidade para rodar **qualquer** workload em **qualquer** nuvem

- Visibilidade de todos os recursos e ambientes em **tempo real**

- Gerencie seus recursos **multivendor** de uma maneira simples e coesa

- Politicas de segurança consistentes, fim a fim
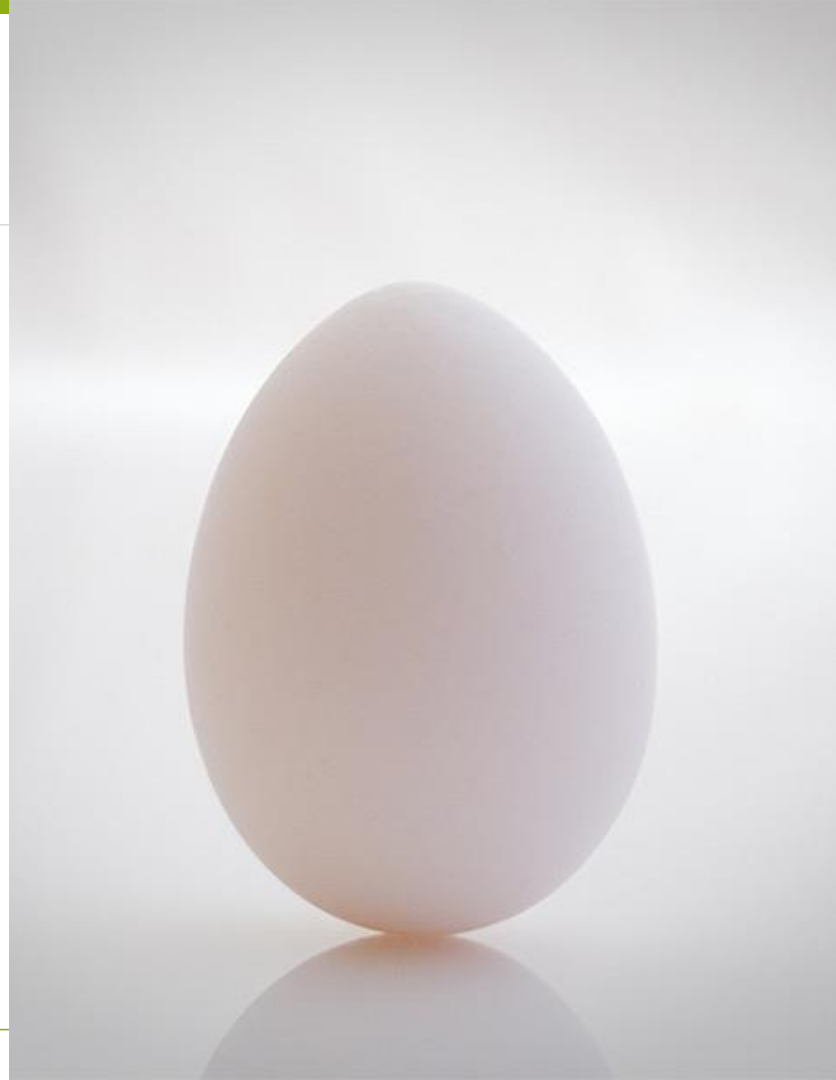
OBRIGADO

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