



# JUNIPER CONTRAIL ENTERPRISE MULTICLOUD DELIVERS ADVANCED FABRIC AUTOMATION TO NUTANIX ENTERPRISE CLOUD

*Scaling hyperconverged infrastructure with advanced fabric automation*

## Challenge

The growing cost and complexity of network, compute, and storage hardware, coupled with teams working in silos to build and support the underlying infrastructure, are presenting significant challenges in an increasingly application-driven world.

## Solution

Juniper Contrail Enterprise Multicloud works with Nutanix Enterprise Cloud to let enterprises build their own private clouds while freely moving workloads between multicloud environments, providing end-to-end policy and control that allows them to operate these environments as a single cloud.

## Benefits

- Enables dynamic configuration of the data center network fabric, eliminating error-prone manual configurations
- Supports end-to-end network policy configuration and management
- Collects and reports network information for virtualized and physical workloads
- Enables consistent policy enforcement across cloud deployments with single-pane-of-glass management

*Manual, rigid, and static connectivity implementations might work for traditional network environments. In the modern cloud/virtualized world, however, where application requirements are highly dynamic, the network must be an agile and scalable partner to compute and storage resources.*

*As applications move between multicloud environments, customers need a policy-driven, programmable, and automated connectivity solution—one that allows them to scale out these services to support the compute and storage architecture while meeting the needs of modern applications.*

## The Challenge

Today's hyperconverged infrastructure is widely leveraged to build modern enterprise cloud environments. Workloads in these environments are typically highly dynamic and ephemeral, which imposes a substantial burden on the underlying network: it must either keep pace or risk failing the business.

Enterprises demand a new approach that aligns with the philosophy of consumption that permeates modern infrastructure. Specifically, the incremental configuration of network devices—particularly when performed in response to workload events—needs to be completely automated.

## Juniper Contrail Enterprise Multicloud and Nutanix Enterprise Cloud: Automating the Underlying Network Infrastructure

Juniper Networks and Nutanix have joined forces to make networking invisible—and therefore more amenable to self-service consumption. This is accomplished by automating the provisioning of the underlying network infrastructure in response to application workload life-cycle events such as the creation, deletion, or mobility of workloads. The Juniper-Nutanix solution also provides enhanced visibility into virtualized workloads as they relate to the network topology.

The joint solution uses Nutanix APIs to provide notifications about workload life-cycle events while exposing information about the workload virtual machines (VMs) via Nutanix WebHook REST APIs. These Nutanix REST APIs are invoked within Juniper® Contrail® Enterprise Multicloud, a single platform that handles all overlay and underlay management across networking, security, and analytics for bare metal, VMs, and containers, both on-premises and in the public cloud. Contrail Enterprise Multicloud uses the retrieved information to configure Juniper Networks QFX Series switches with the relevant VLAN and firewall filter settings (see Figure 1).

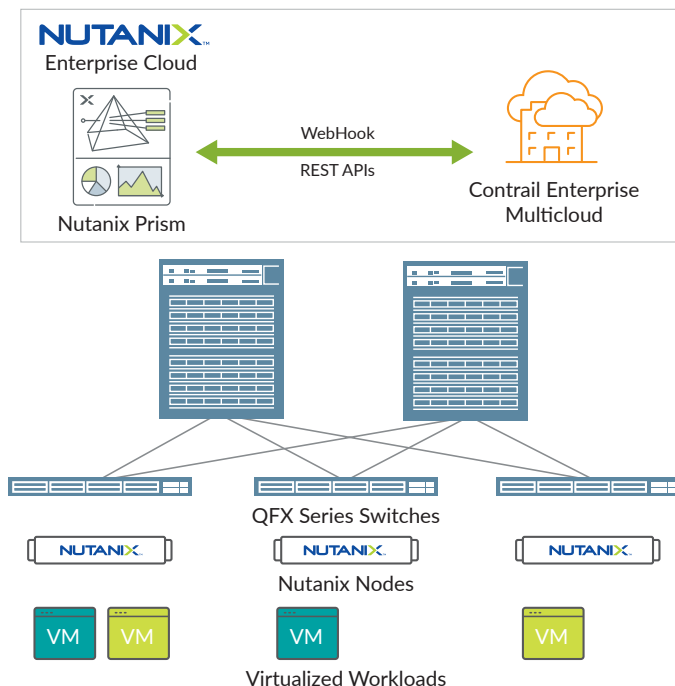


Figure 1: Nutanix Enterprise Cloud, Contrail Enterprise Multicloud, and QFX Series switch integration

System administrators manage the life cycle of virtual machines running on Nutanix AHV via the Prism Management Framework. Nutanix provides a mechanism for reporting VM life-cycle events to subscribing entities; Contrail Enterprise Multicloud, for instance, subscribes to the Nutanix WebHook notifications.

Contrail Enterprise Multicloud employs a logically centralized but physically distributed controller software that is extended throughout the network to:

- Subscribe to Nutanix’s WebHook notifications about VM life-cycle events
- Respond to WebHook notifications by invoking further APIs to obtain additional information about VMs
- Invoke Contrail Enterprise Multicloud’s fabric management features to create appropriate Ansible playbooks and push the relevant QFX Series switch configuration—which may include network segment and firewall filter information—over Network Configuration Protocol (NETCONF)
- Provide visibility into VM workloads as they relate to the underlying physical network topology
- Check for discrepancies or misconfigurations
- Cleanly wipe configurations from network devices once corresponding VM events have been deleted

## Features and Benefits

The following table outlines the primary features and benefits of this joint Juniper-Nutanix solution.

Table 1. Features and Benefits

Features	Benefits
<b>Automation</b>	Enables dynamic configuration of underlay network in response to corresponding VM life-cycle events while avoiding error-prone manual configuration of physical network devices
<b>Multidomain connectivity</b>	Simplifies network virtualization with seamless connectivity across domains with a common fabric management platform
<b>Multivendor orchestration</b>	Provides a common orchestration layer that sits atop a heterogeneous underlay
<b>Operational simplicity</b>	Supports end-to-end configuration and manageability for networking
<b>Visibility (integration with Nutanix APIs)</b>	Offers visibility and insights into traffic to and between application and virtual workloads

The Juniper Networks and Nutanix joint solution includes the following key components:

### Juniper Contrail Enterprise Multicloud

Contrail Enterprise Multicloud is a single platform that handles all overlay and underlay management; heterogeneous compute environments, including bare-metal servers, VMs, containers, and networking devices; private and public clouds; networking and security orchestration policies, including microsegmentation; and advanced analytics.

### Nutanix Enterprise Cloud

Nutanix Enterprise Cloud combines the agility and simplicity of the public cloud with the security and control you need in a private cloud. Built on the industry’s leading hyperconverged infrastructure (HCI) technology, it integrates compute, storage, virtualization, and networking in a full-stack solution that runs nearly any application.

## Summary—Advanced Fabric Automation for Your Enterprise

The joint Juniper Networks and Nutanix hyperconverged solution changes the landscape for enterprise data centers, enabling organizations to meet the automation challenges of highly dynamic applications with an underlying network fabric that becomes part of a modern agile infrastructure. This allows enterprises to deploy multicloud-ready infrastructure without the typical overhead of operational and management complexity.

### Next Steps

For more information about Juniper Networks, please visit [www.juniper.net](http://www.juniper.net). For more information about Nutanix, please visit [www.nutanix.com](http://www.nutanix.com).

## About Nutanix

Nutanix makes infrastructure invisible, elevating IT to focus on the applications and services that power their business. The Nutanix enterprise cloud platform leverages web-scale engineering and consumer-grade design to natively converge compute, virtualization, and storage into a resilient, software-defined solution with rich machine intelligence. The result is predictable performance, cloud-like infrastructure consumption, robust security, and seamless application mobility for a broad range of enterprise applications.

## About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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