

Juniper and Mirantis Integrate Contrail Networking and Mirantis OpenStack

Juniper and Mirantis deliver on the promise of OpenStack-powered clouds with SDN

Challenge

SDN deployment for the cloud does not need to be challenging nor require any upgrade of the physical network.

Solution

Mirantis and Juniper Networks have worked together to deliver on the promise of OpenStack-powered clouds with SDN. The integration of Mirantis OpenStack, Mirantis Fuel, and Juniper Networks Contrail Networking enables users to seamlessly instrument the Contrail Networking solution as part of an OpenStack deployment.

Benefits

- Reduces cost by enabling service providers and IT administrators to easily embrace open SDN and OpenStack technologies in their environments
- Removes the complexity of integrating networking technologies in OpenStack clouds
- Increases operational effectiveness with fully integrated management for the OpenStack and SDN environments using the power of OpenStack, Fuel, and Contrail Networking

SDN has the potential to provide the enterprise with numerous advantages, including the ability to enable scalable multitenancy and dynamic adjustments to networking based on APIs and the telemetry of network conditions. While SDN is a novel approach to networking, putting more sophistication in software, SDN deployment for the cloud does not need to be challenging or even require any upgrade of the physical network. Similar in significance to learning and deploying OpenStack, moving to an open SDN architecture can set cloud builders free from costly and proprietary technologies of the past and future.

Today, through the power of software abstraction and the integration of networking workflows, it is possible to deploy and configure SDN without ever having to touch the low-level configurations or code.

The Challenge

Today's large organizations and service providers need to be able to efficiently provide secure, high-performance, SLA-compliant cloud services and virtualized network functions to multiple tenants across multiple locations and hybrid cloud topologies. At the same time, they want to make best practical use of existing equipment to avoid "rip and replace" expenditures. While SDN is a novel approach to networking and puts significant sophistication into software, SDN deployment for the cloud should not need to be challenging nor require any upgrade of the physical network.

The Juniper Networks Contrail Networking and Mirantis OpenStack Solution

Mirantis is the leading pure-play OpenStack company, creator of the highly-praised Mirantis OpenStack distribution. It is currently the #3 contributor to OpenStack core and has built more large-scale enterprise and service provider OpenStack clouds than any other entity. Mirantis OpenStack incorporates a sophisticated pre-configuration and deployment tool (Fuel) that substantially automates the creation of robust OpenStack clouds in high availability (HA) configurations. Mirantis is a founding member of the OpenStack Foundation and presently holds a seat on the OpenContrail Advisory Board as one of the ten largest contributors to that effort.

Mirantis has integrated Mirantis OpenStack (MOS) with Juniper Networks® Contrail Networking through OpenStack's Neutron networking API and plug-in interface. This integration enables users to seamlessly instrument the Contrail Networking solution as part of an OpenStack deployment.

Contrail Networking, based on the open source OpenContrail codebase, is an SDN solution comprised of a highly available controller and a server embedded virtual router. It is interoperable by means of open protocols with physical network infrastructure. Contrail is aimed at large organizations and service providers that need to efficiently provide secure, high-performance, SLA-compliant cloud services and virtualized network functions to multiple tenants across multiple locations and hybrid cloud topologies, while making best practical use of existing equipment to avoid "rip and replace" expenditures.



Further Integration with Mirantis Fuel

Mirantis has leveraged its background in the OpenStack community in its work on the open source Fuel project, which simplifies the deployment and management of OpenStack environments. Fuel provides a management plane that makes it possible to specify, configure, and create multiple OpenStack clusters using a simple point-and-click interface. The Mirantis Fuel solution provides the following capabilities:

- An all-in-one ISO installer that includes both the base operating systems and Mirantis OpenStack images for installation
- The ability to automatically discover available nodes for provisioning
- Point-and-click storage setup
- A convenient web-based UI for network setup and validation
- Horizon installation for cluster management

The Fuel project provides an open and flexible library, making it possible to integrate third-party plug-ins such as the plug-in for Juniper Contrail Networking. The integration of Fuel with Contrail Networking provides the ability to:

- Use a single interface to install both the Contrail SDN solution software and the Fuel master node
- Automatically discover available nodes and present them from within the Contrail SDN Controller interface
- Deploy high availability (HA) configurations of OpenStack
- Install all Contrail Networking components, such as the clusters of configuration, control, analytics nodes, etc.
- Deploy the MOS-Contrail integrated edition of Horizon, the OpenStack dashboard, complete with advanced OpenStack networking powered by Contrail

This integration provides a number of different benefits for customers by embedding Contrail Networking into Fuel. In addition to installing Contrail Networking, Fuel remains behind the scenes. This means that Contrail Networking users take advantage of Fuel to monitor and perform maintenance on an OpenStack cluster. For example:

- Administrators can deploy a Contrail-enabled OpenStack cluster using Fuel.
- Whenever administrators want to add a new compute server node, they can use the Fuel interface to add the node, including full integration with the SDN, so the Contrail vRouter is deployed and activated.
- The new node appears in the Mirantis OpenStack and Contrail APIs and user interfaces, ready for use.

Features and Benefits

- By simplifying both deployment and maintenance of your OpenStack cluster, the integration of Fuel and Contrail Networking reduces cost by enabling greater control, easier management, and more robust scalability.
- A high-performance virtual networking overlay solution on common physical network infrastructure seamlessly plugs into Mirantis OpenStack's Neutron component. This enables scale-out growth to large multitenant clouds with per-tenant or per-application segmentation in the form of a VPN as a Service solution (inclusive of high availability), Load Balancer as a Service, security policy, network analytics, and more.
- An NFV policy framework streamlines internetworking virtual network segments with chainable virtualized network functions (VNFs).
- An open standards-based, BGP-federated virtual network gateway mechanism enables the extension of VPNs securely outside data centers to remote facilities and across hybrid clouds. It is widely interoperable with IP-VPN and EVPN physical routers and switches.
- An open SDN API over and above Neutron offers additional networking workflows through an API-driven Web user interface and northbound APIs for deeper DevOps automation.
- An analytics engine offers out-of-the-box instrumentation, troubleshooting, telemetry, and visibility for network traffic and cloud performance analytics with APIs for exporting data to specialized big data analytics systems such as Hadoop.

Solution Components

Juniper Networks Contrail Networking: Contrail Networking, based on the open source OpenContrail codebase, is an SDN solution comprised of a highly available controller and a server-embedded virtual router. As leading cloud networking and service orchestration powered by open technology, Juniper's open SDN solution for cloud and NFV improves business agility with security, availability, performance, automation, and elasticity.

Mirantis OpenStack: Mirantis OpenStack is a zero-lock-in OpenStack distribution that makes deploying your cloud easier, and more flexible, and more reliable. Mirantis OpenStack builds in continuous verification, hardening the distribution across the thousands of dependencies and configuration settings needed to ensure upstream packages are validated across multiple versions of OpenStack complements – such as OSs, hypervisors and DBs – and tested at scale against a broad range of real-world use cases.

Mirantis Fuel: Fuel is an open source deployment and control plane for OpenStack. Developed as an OpenStack community effort, it provides an intuitive, GUI-driven experience for automated deployment and management of OpenStack, related community projects and plugins. The Fuel project provides an open and flexible library, making it possible to integrate third-party plug-ins.

Cloud Data Center Joint Reference Architecture Guide

Mirantis and Juniper Networks have collaborated to produce an all-inclusive Joint Reference Architecture White Paper, offering step-by-step instructions for integrating Mirantis OpenStack with Juniper Contrail Networking plus recommendations for scaling Contrail Networking to support OpenStack clouds up to large server node counts.

Summary—Juniper and Mirantis Deliver on the Promise of OpenStack-Powered Clouds with SDN

Moving to an open SDN architecture can set cloud builders free from costly and proprietary technologies of the past and future. This Mirantis-Juniper joint solution reduces cost by enabling service providers and IT administrators to easily embrace open SDN and OpenStack technologies in their environments. It removes the complexity of integrating networking technologies in OpenStack clouds. Moreover, it increases operational effectiveness with fully integrated management for OpenStack and SDN environments using the power of Mirantis OpenStack, Fuel, and Contrail Networking.

Next Steps

If you would like to learn more about this joint solution, please contact your Juniper Networks representative for more information.

About Mirantis

Mirantis is the number one pure-play OpenStack Company. We deliver all the technology, integration, training, and support required for companies to succeed with production-grade open source cloud. More customers rely on Mirantis than any other company to scale out OpenStack without the compromises of vendor lock-in. Our bench of 400+ open source infrastructure experts helped make us one of the top 5 contributors to OpenStack's upstream codebase.

Mirantis is headquartered in Mountain View, California, and operates across five additional international locations in Russia, Ukraine, and Poland. The company is venture funded, including investments by Intel Capital, West Summit Capital, Ericsson, and SAP Ventures.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

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