Alcatel·Lucent Enterprise & NUTANIX

OmniSwitch integration with Nutanix Enterprise Cloud

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Introduction

In the ever-evolving landscape of hybrid infrastructures, the demand for dynamic network adaptability has never been more pronounced. The challenges posed by the constant flux of network requirements underscore the necessity for solutions that are not only flexible but also adept at automation. In response to this imperative, Alcatel-Lucent Enterprise has collaborated with Nutanix to introduce a revolutionary integration, seamlessly fusing **ALE OmniSwitches** with the cutting-edge **Nutanix Hyperconverged Infrastructure** (HCI).

This collaborative venture represents more than just a partnership, it signifies a transformative paradigm shift in addressing the intricate processes associated with **Virtual Machine creation**, **modification**, or **migration**. This document delves into the intricacies of this alliance, unveiling a comprehensive understanding of the ALE plugin's capabilities and its seamless integration with Nutanix HCI. From the **auto-discovery of Nutanix cluster nodes** to the **dynamic creation of VM default gateway interfaces**, our integration ensures a fully automated network adaptation as virtual infrastructures move **effortlessly**.

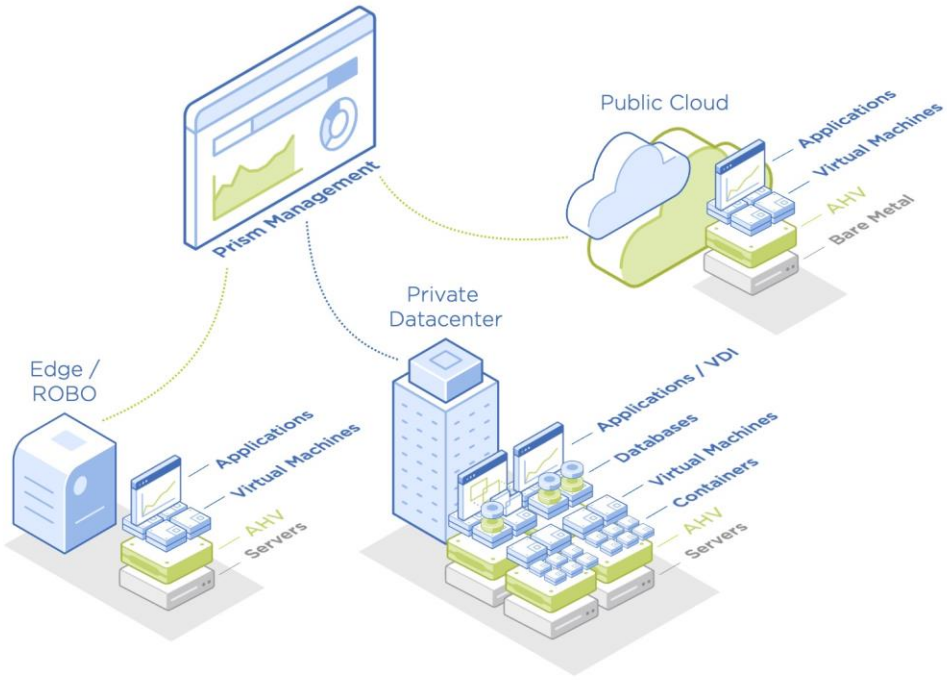
Join us on this journey through the realms of technology, as we explore the unprecedented benefits and functionalities brought forth by the Alcatel-Lucent Enterprise and Nutanix collaboration. Together, we pave the way for a network infrastructure that not only survives but thrives in the face of evolving challenges, embodying the core principles of **agility**, **automation**, and **adaptability**.

Nutanix Alliance and Technology Program

Introduction to Nutanix

As a global leader in cloud software, Nutanix transforms the way organizations do business. We offer a single platform to run all your apps and data across on-premises, public clouds, hybrid environments, and at the edge, while simplifying operations and reducing complexity. Our hybrid multicloud platform unifies management with one-click, applies intelligent AI-driven automation, and helps ensure always-on availability. Building on our legacy as the pioneer of hyperconverged infrastructure, we've earned a reputation for customer satisfaction, powering hybrid multicloud environments consistently and cost effectively. This enables companies to remain focused on achieving successful business outcomes and new

innovations. Learn more at Nutanix.com.

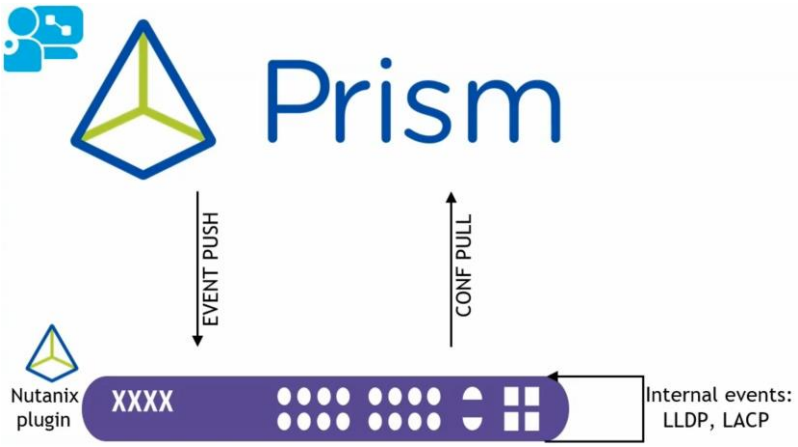


Participation in Nutanix's Program

Aligned with Nutanix's vision, we actively engage in their Technology Alliance Partner Program. Visit the Nutanix Elevate Technology Alliance Portal for details, including our dedicated landing page. Expect a detailed technical brief on our collaborative solution.

OmniSwitch-Nutanix API Integration

The OmniSwitch-Nutanix API integration is facilitated through a Nutanix plugin, an additional OmniSwitch package that seamlessly integrates with Nutanix's Prism management solution. This API-level integration operates in both push and pull modes, enabling real-time adjustments for enhanced network adaptability.



Pull Mode at Switch Boot-up

The plugin, upon switch boot-up, initiates a pull operation, retrieving network configuration details from Prism. It then bootstraps the switch configuration to align seamlessly with the information obtained.

Push Mode for Real-time Events

In push mode, the plugin responds dynamically to changes made in Prism, such as configuration adjustments or VM migrations. Prism immediately pushes these events to the plugin, allowing on-the-fly modifications to accommodate the evolving network environment.

Internal Event Handling

The plugin efficiently processes internal events generated by the switch, ensuring a plug-and-play experience. It detects new hypervisor connections, disconnections, movements, and configurations and adapting to these changes.

Benefits of Integration

Auto Discovery and Attachment

Automatic discovery and attachment of Nutanix cluster nodes streamline network management.

Auto Service Configuration

Automatic service configuration for virtual machines enables direct virtual network configuration through Prism. The network seamlessly adapts without manual intervention, making Prism a comprehensive single pane of glass for the entire datacenter.

Auto IP Configuration

Automation extends to IP routing, going beyond VLANs to automate the creation of VM default gateway interfaces and routing.

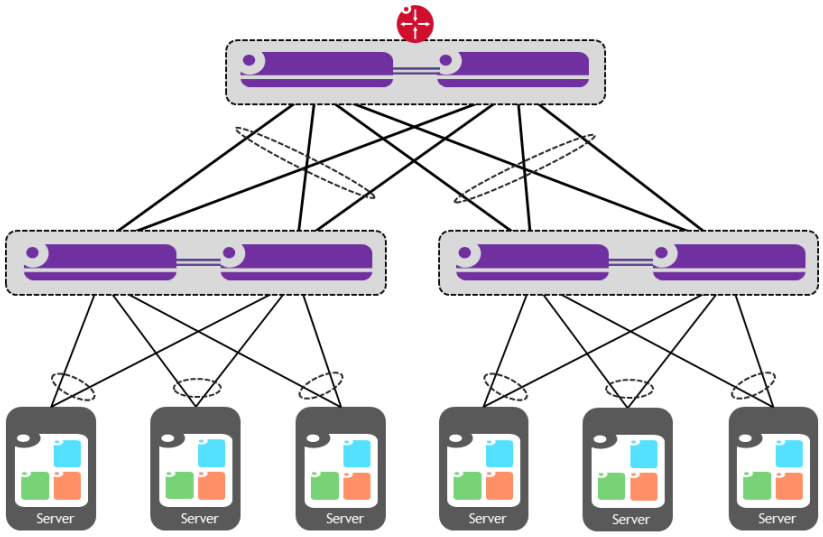
VM-Centric Show Commands

Provides VM-centric show commands, enhancing visibility into the virtualized environment and facilitating troubleshooting.

Central Orchestration / Distributed Control

This integration achieves a centralized network orchestration through Prism, while maintaining distributed control. The control plane remains on the switch, ensuring a harmonious balance between centralized management and distributed control for optimal network performance.

Architecture



This architecture showcases a Spine and Leaf topology based on a virtual chassis, offering a clear and concise blueprint for seamless integration and automated network management.

Unified Network Automation Suite

Auto Hypervisor Discovery through LLDP

Automatic hypervisor discovery is facilitated through Link Layer Discovery Protocol (LLDP), ensuring swift and efficient identification of hypervisor nodes within the network.

Auto LACP Attachment for Automatic Connection

The integration includes automatic attachment through Link Aggregation Control Protocol (LACP), streamlining network connections for enhanced efficiency.

Auto VM Discovery and Mapping to Appropriate VLAN

Leveraging existing functionality, the plugin augments network information with API-obtained data, enabling comprehensive details about VMs running on different hypervisor nodes. Automatic mapping to the appropriate VLAN ensures a well-organized network structure.

Automation of V-motion Events and VLAN Adjustments

The network is adept at handling V-motion events and VM migration configurations, immediately notifying and making real-time adjustments. VLANs are tagged and untagged on-the-fly, ensuring seamless transitions.

Auto Creation of VM Default Gateway Interfaces and Routing

The architecture automates the creation of VM default gateway interfaces and routing between various application tiers or subnets, enhancing network functionality.

VC-Based High Availability (HA) - No Single Point of Failure (SPOF)

Running the plugin in a virtual chassis ensures high availability. In the event of a master unit failure, the plugin seamlessly restarts on the slave, preventing service disruption. This approach eliminates the risk of a single point of failure, enhancing the reliability and resilience of the network.

MVRP for VLAN Propagation

Important to note that for efficient VLAN propagation between Spines and Leafs, the architecture employs Multiple VLAN Registration Protocol (MVRP). MVRP facilitates dynamic VLAN registration, ensuring seamless communication and VLAN distribution across the Spine and Leaf components, further enhancing the adaptability, scalability, and resilience of the network.

This sample architecture not only illustrates the efficiency of the integration but also emphasizes its adaptability, scalability, and robust high-availability features for a resilient network infrastructure. For more datacenter architectures, you can refer to our Datacenter Solution Guide available on our Network Community Spacewalkers.

Conclusion

In concluding this exploration of the Nutanix technology alliance and integration, we draw key insights that underscore the transformative impact of our collaborative efforts.

Unique Value Proposition

Through the implementation of this plugin, we introduce a distinctive and unparalleled value proposition to our shared customers. This synergy goes beyond mere validation, offering a

deeply integrated solution that elevates the overall value delivered by our respective platforms. Notably, this proposition is presented **without any NMS intermediaries**, ensuring a direct and streamlined experience with **no Single Point of Failure**.

Deep Integration Enhancing Combined Solution

The integration between our solutions extends beyond mere validation to achieve a profound level of integration. This not only validates compatibility but also enhances the operational synergy, ensuring a combined solution that **seamlessly addresses the dynamic challenges** of modern network infrastructures.

Seamless Orchestration and Integration

The pinnacle achievement of this collaboration is the realization of seamless orchestration and integration through a **unified management interface**. The plugin facilitates centralized control while preserving distributed autonomy, providing network administrators with **a single pane of glass** for **comprehensive** and **efficient management**.

We take pride in offering a solution that not only meets but exceeds the expectations of our users, ensuring a **resilient**, **automated**, and **adaptable** network environment.