Solution Overview

Orchestral.ai & CommScope Joint Solution

November 2022

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Overview

This document describes joint solutions using Orchestral.ai and CommScope, with initial focus on using the Composer from Orchestral.ai for automations using SmartZone controllers and ICX switches from RUCKUS Networks. Future solutions might include Cloudpath, RUCKUS Analytics and other RUCKUS products.

Orchestral.ai - CommScope Joint Solution

Unified Converged Edge, Wireless and Wired Network Automation and Orchestration

Enterprise IT Infrastructure has evolved into a diverse, distributed and disparate global infrastructure. IP Networks is the only function that connects the global infrastructure to operate as a single entity to support the business needs of the enterprise. The Converged Data Center (DC) to Edge Network is a strategy to extend the wired and wireless networks under one networking control plane to ensure the optimal functioning of the business.

The advancements in Software Defined Wide Area Network (SD-WAN) and Secure Access Service Edge (SASE) have heightened the need for unified wired, wireless and edge management. The Edge network is also being extended to mobile networks with 5G technology. The network is made up of network equipment that belong to multiple vendors and different deployment form factors. In addition to the different network vendor equipment, each enterprise has varied backend software systems to configure, manage and audit the networks.   The implicit challenge of such a network is to provide uniform access across the network to multi-vendor enterprise assets.

Orchestral.ai and CommScope are delivering a joint solution to address the needs of a Converged DC to Edge network orchestration. Orchestral.ai's Composer is a cross-domain, event-driven orchestration platform that utilizes automation packs to integrate to the various target end systems within an IT environment. The automation packs provide the requisite actions to create a cross domain workflow to automate operations across the IT infrastructure. Orchestral.ai has developed the Enterprise RUCKUS SmartZone and RUCKUS ICX automation packs to enable seamless automation across wired and wireless networks. RUCKUS Analytics is also integrated into the solution to provide real-time network observability and analytics to be leveraged by the solution to provide event-driven auto-remediation.

The solution architecture, shown in Figure 1., is being implemented in two phases starting within the Enterprise wired network infrastructure to the wireless networks, and later extending the network to the converged edge.
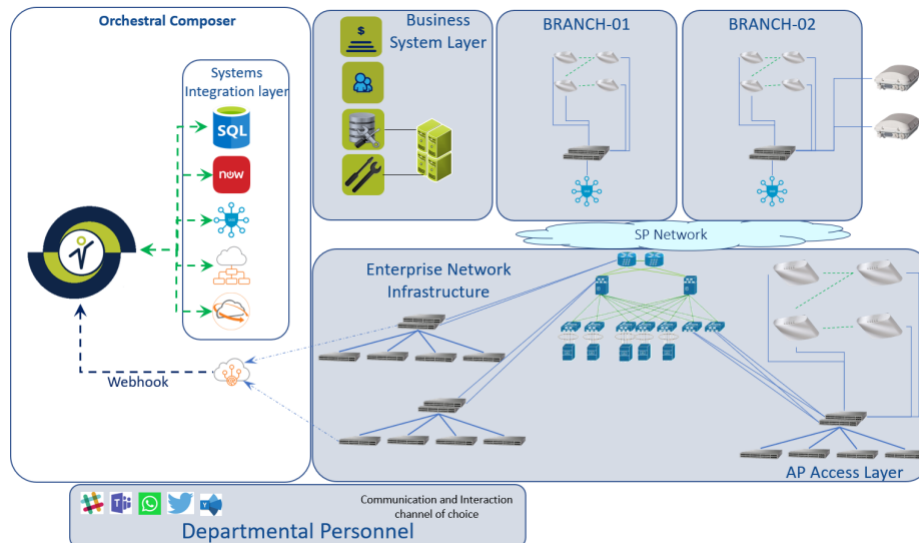

Figure 1. Orchestral.ai - CommScope Converged Edge Orchestration

The joint solution leverages multiple Composer Automation Packs integrating to the target end systems to enable cross-domain orchestration. The integrations not only across the networking domain but also across the ITSM (ServiceNow) and Configuration Management Database (CMDB) domains. The integrations are:

- RUCKUS-ICX Pack – contains actions to perform automation on ICX switches

- RUCKUS-SmartZone Pack – contains actions to perform automation on SmartZone to provision RUCKUS Access Point

- RUCKUS Analytics (future) – provides observability and ML/AI based analytics for real-time network monitoring to provide root cause analysis. The webhook capability enables the integration of RUCKUS Analytics into Composer for event-driven automation.

- SASE Automation Pack – contains the actions to perform automation on SASE devices

- ServiceNow Pack – contains the actions to perform automation on a ServiceNow

- SQL Pack – contains the actions to perform automation on an SQL based Configuration Management Database (CMDB)

Unified orchestration and management of the end-to-end enterprise network enable the network to be nimble and agile to the changing needs of the enterprise. The workflow automation of network tasks across multiple networking layers makes network services provisioning more efficient and less error-prone. This agility is achieved while ensuring network security with centralized visibility and compliance management utilizing the RUCKUS Analytics Engine and Composer integrations.

Unified Enterprise Wired and Wireless Network Orchestration

The Unified Network Orchestration for Wired and Wireless networking is accomplished by Orchestral Composer and the automation packs that have been developed for the RUCKUS SmartZone Controller, RUCKUS ICX Network Switches, and RUCKUS Analytics.   The use cases that are addressed by the solution are:

- Zero Touch Provisioning of RUCKUS Wireless Access Point

Zero Touch Provisioning of RUCKUS Wireless Access Point is accomplished by the event-driven orchestration of Composer. In the event of the Access Point (AP) being connected to the wired RUCKUS ICX switch port, the expert system of the solution will trigger a webhook to Orchestral Composer to execute an AP provisioning workflow as shown in Figure 2. A syslog server, such as Splunk or ElasticSearch, is configured to receive the syslog messages from the RUCKUS ICX. The event of a new AP being connected to RUCKUS ICX switchport changes the port state to connected, and a syslog message for this is generated and directed to the syslog server. The syslog server's watcher rule triggers a webhook to Composer to execute install_new_ap workflow.   The rule-based Composer platform subsequently executes an appropriate workflow to provision the new AP to join the wireless mesh network as per the configuration defined in the CMDB. In addition, the RUCKUS-ICX and RUCKUS SmartZone Composer automation packs provide several other actions to perform individual operations on the ICX switches and Wireless APs.

The event-driven ZTP provisioning of RUCKUS Wireless Access Points enables an enterprise to rapidly deploy a wireless mesh network for business agility. The joint solution utilizes RUCKUS Analytics for observability and analytics to provide a dashboard of business-critical metrics and utilizing the ML and AI algorithms assists in fast and effective remediation of errors in the network.
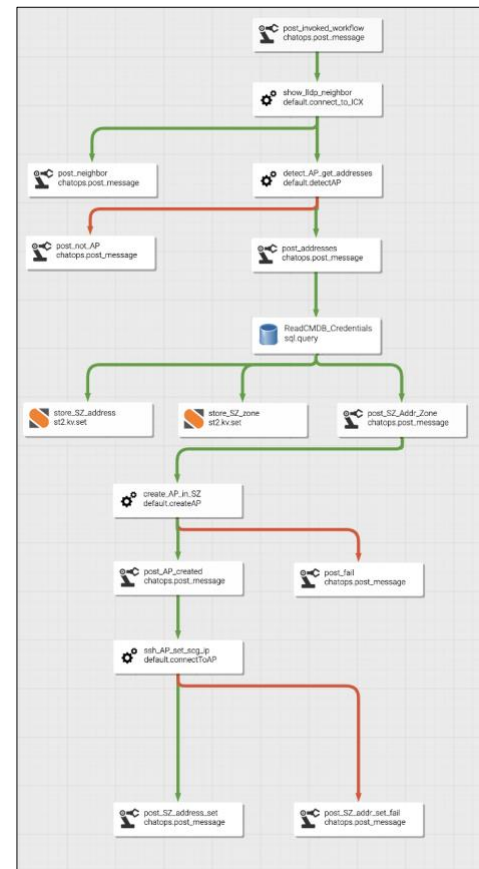

Figure 2 – ZTP of Access Points – Composer Workflow

- Event Driven Management of Wired and Wireless Networks

The events generated in the network are being monitored and analyzed by RUCKUS Analytics and can generate a webhook to Orchestral Composer to perform verification and auto-remediation workflows within seconds of the event occurring within the infrastructure. Orchestration workflows similar to the workflow shown in Figure 2. developed for the appropriate operation will ensure the optimum operations and uptime of the network. The integration into the CMDB facilitates the management of network configuration for security and compliance purposes.

Composer with RUCKUS Analytics will provide the ability to not only identify an issue in the network, but also provide the ability to perform root cause analysis and post the analysis to execute automated remediation workflows to rectify the issues within seconds of the issue/event occurring in the network. The joint solution provides a secure, agile and reliable end-to-end network solution to the enterprise with manual intervention needed only when necessary.

Converged Edge Network Orchestration

The Orchestral - RUCKUS joint solution extends the existing solution of RUCKUS SmartZone Controller, RUCKUS ICX Network Switches, and RUCKUS Analytics integration to address integrations with 3rd party SD-WAN and SASE integrations in the 2nd phase of the solution.

The solution designed and implemented in Phase 1 provides event-driven, cross-domain orchestration of the wired and wireless networks. In order to meet the diverse and distributed nature of enterprise IT, the next logical step is to extend this solution to incorporate SD-WAN and SASE functionality. Orchestral has developed the enterprise automation solution for a combined SD-WAN and SASE orchestration. The actions developed in the SD-WAN Automation pack can now be used to create workflows that will orchestrate network operations across the wired, wireless, SD-WAN and SASE networks. The Unified Network Management Architecture is shown in Figure 1.

Composer provides a centralized provisioning and management platform coupled with RUCKUS Analytics ML/AI-based analytics ensuring that the end-to-end DC Wired to Wireless to SD-WAN networks provide the benefits of:

- Secure DC to Edge network ensuring compliance with enterprise security policies
- Real-time root cause analysis for the entire network
- ZTP/Automated provisioning of network devices with proper compliance
- Automated remediation of network issues with little or no manual intervention

The same orchestration workflows are extensible to any other vendor Access Layer switches as the Orchestral Network Automation Application is a vendor-agnostic network automation application. The vendors currently supported by the application are Arista, Cisco, Juniper, MikroTik and RUCKUS.

Orchestral.ai - RUCKUS Joint Solution Components *Orchestral Composer*

Composer by Orchestral.ai is an event-based business workflow automation platform that leverages the open source "IFTTT for ITOPS" StackStorm. As an enterprise grade workflow automation platform, Composer features an intuitive drag-and-drop Workflow Design Studio; a design canvas to create complex cross-domain process workflows of arbitrarily high complexity. Proven to reduce mean time to resolution from days to minutes, Composer extends beyond automation with a vast list of integrations across diverse IT and non-IT domains. Capable of interacting with end systems via API's webhooks, PowerShell, and shell scripts, Composer is the central connector to enable the enterprise to take advantage of event-driven orchestration. The platform's integration with existing monitoring tools enables auto-remediation of common IT tasks. While the capability to glue together existing and new automations enables full spectrum event-driven, cross-domain orchestration workflows.
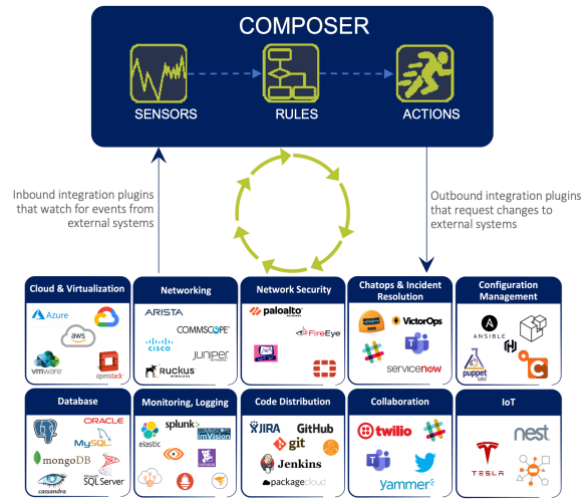

Figure 3 – Orchestral.ai - Composer Architecture

With over 450+ integrations, Composer can be utilized as a cross-domain orchestration engine to solve many use cases throughout the IT infrastructure. Highlighted below are two key solution domains of Composer:

- Network Automation and Orchestration

Orchestral's Composer exists to maximize IT agility & business continuity by ensuring that the foundational network availability is maintained. With the rise of virtualization and cloud strategies increasing the complexity of the IT infrastructure, automating network operations have become central to the success of any enterprise. Orchestral Composer's event-driven and vendor-agnostic capabilities can perform key network automation and orchestration use cases including Event-driven Network Device and Stack Auto-Remediation, Multi-Domain SD-WAN Orchestration, Automated Actions and Workflows for Recurring Network Device Configuration, along with many more network-oriented automations. Network Operation teams powered by Composer are a combination that can bring the enterprise far along their path towards Digital Transformation.
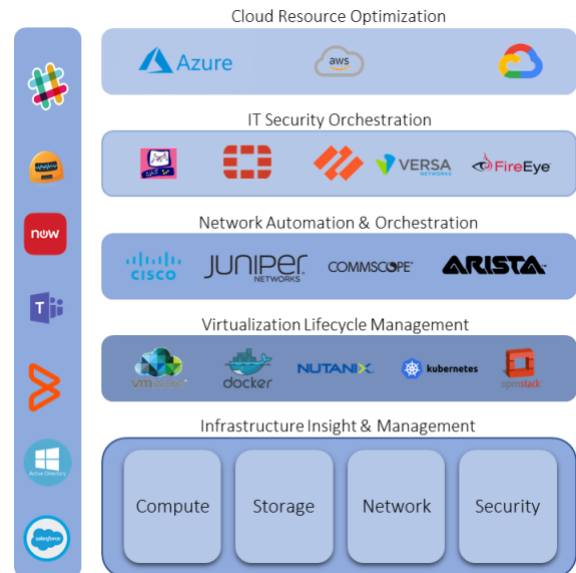

Figure 4 – Orchestral.ai - Composer Use Cases

- Virtualization Lifecycle Management

Enterprises require an agile virtual infrastructure to remain competitive, but maintaining that agility is increasingly difficult with the rise of data across multiple clouds, SaaS applications and private data centers. Orchestral Composer's event-driven workflow capabilities along with integrations for various virtualization and hybrid cloud tools enable many solutions to be unlocked. Zero Touch Provisioning of Virtual Machines and Cloud Resources, On-prem and Hybrid Cloud VM Management and Sprawl Remediation, along with Event-driven auto remediation of vCenter events are just a handful of use cases that Composer can be applied to. Composer's focus on integrations allows users to not need to rip and replace existing scripts and automations, but to instead utilize them within Composer workflows.

At Orchestral.ai, our goal is to help companies along their automation journey and to focus on reducing the complexity of modern enterprise infrastructures. If you would like additional information on any of the above use cases and to see our full list of solutions, please visit us at Solutions of Orchestral.ai.

Conclusion

Orchestral.ai and RUCKUS are partnering to provide an orchestration platform to enable provisioning and management of RUCKUS SmartZone Wireless and RUCKUS ICX Wired Networking under one networking control plane. Furthering the capabilities of our partnership, Composer can be integrated with RUCKUS Analytics to provide proactive event-driven remediation and automated troubleshooting for your team. As enterprises networks continue to become more complex and IoT devices are tied into the Converged Edge Network, the Orchestral.ai and CommScope - RUCKUS joint solution can be extended to include integration with 3rd party SD-WAN and SASE integrations to enable network teams to operate from a true single control plane.

RUCKUS solutions are part of CommScope's comprehensive portfolio for Enterprise environments (indoor and outdoor).

We encourage you to visit commscope.com to learn more about:

- RUCKUS Wi-Fi Access Points
- RUCKUS ICX switches
- SYSTIMAX and NETCONNECT: Structured cabling solutions (copper and fiber)
- imVision: Automated Infrastructure Management
- Era and OneCell in-building cellular solutions
- Our extensive experience about supporting PoE and IoT