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CASE STUDY

Seamless and Scalable Integration of ADC with SDN

Customer Overview

The customer is a global organization focused on creating, securing, and delivering enhanced digital experiences.

The Context

The customer is a leading provider of Application Delivery Controllers (ADCs). End customer SDN (Software Defined Network) providers facilitate attaching ADCs to improve endpoint connectivity and availability. There were several challenges with the customer's existing solution to integrate the ADCs with SDNs. The solution involved a very complex installation and onboarding process and did not provide a unified way to view or configure ADCs, correlate SDN and ADC configurations, or integrate ADCs across tenants. To resolve these issues, the customer required an application that could be hosted on a multi-tenant SDN to enable ADC configuration and data correlation between them through seamless integration.

Type of Service Provided

Application Development

Technologies Used

Web Applications, Web Frameworks, Software Defined Networks, Containerization

Solution Summary

GS Lab | GAVS developed a REST based containerized web application - hosted on the SDN controller framework, that creates a conduit between the SDN and ADC, enables data correlation between them, and supports multi-tenancy. The application enabled seamless integration of the two systems, unified view and management of all ADCs.

Challenges

- Complex installation and onboarding, tedious and time-consuming integration
- No unified UI to view or configure all ADCs
- Integration had to be done from SDN UI separately for each tenant
- Required manual and separate configurations from SDN and ADC UIs
- No way to visualize and correlate SDN and ADC configurations (VLANs, endpoints, etc.) for traffic flow from clients to servers
- Manual errors required separate debugging for every tenant and ADC

Solution Highlights

- REST based containerized web application hosted on the SDN controller framework
- Creation of conduit between SDN and ADC and enablement of data correlation
- Support for multi-tenancy
- Complete visibility into network configurations
- Intuitive UI to push configurations onto the ADCs
- Dynamic endpoint discovery and topology mapping
- Automatic detection of misconfigurations and remediation

Solution Impact

- Seamless integration of two systems, unified view and management of all ADCs
- 1354+ downloads from the SDN marketplace
- Highly scalable application supporting configuration of 100+ ADCs
- Improved troubleshooting capabilities due to complete visibility
- Easy way to configure ADCs due to dynamic discovery
- Reduction in manual effort through dynamic discovery, automatic configuration of endpoints
- Well appreciated and heavily used by end customers
- Routine addition of new features and enhancements to cater to end customer requests
- Enhanced sales by highlighting free application in sales pitches

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Solution Details

Leveraging its rich experience in SDNs, GS Lab | GAVS delivered an SDN application that creates a conduit between the SDN and the customer's ADCs, providing visibility into network configurations, and a way to easily push these configurations onto the ADCs using the application's UI, hence achieving load balancing and ADC functions for the data center traffic workflows.

This specific end customer SDN provides a container-based application management infrastructure running on the SDN controllers. The infrastructure facilitates management of multiple such containerized applications and necessitates adherence to specific communication patterns between the controller and the application using REST APIs.

Feature Highlights

1. REST based containerized web application hosted on the SDN controller framework
2. Highly scalable application supporting configuration of 100+ ADCs
3. Misconfiguration detection and correction capabilities
4. Multi-tenancy support
5. Data correlation between SDN and ADC
6. UI and REST based management console
7. REST API automation scripts for large scale setups
8. Stateful application with high stability and availability; ensures availability after errors and restarts; provides stable operations in a clustered file system environment
9. Supports upgrades and database migration from one setup to another

Core Use Cases

1. **L2-L3 Network Management -** Network configuration capabilities to facilitate L2-L3 stitching between SDN and ADC (includes VLAN interface and default route configurations)
2. **Visibility** into network elements like VLANs, virtual servers, nodes, and correlation with SDN information like tenant, application profile, endpoint groups
3. **L4-L7 Application Services** that leverage ADC's automation and orchestration toolchain (a declarative API model) and support them from within the app:
   a. JSON and REST based support to create and maintain virtual load balancers at scale
   b. Template based support to create and maintain typical ADC load balancer configurations which are of interest to end customers

Additional Features

1. Dynamic discovery of endpoints
2. Dynamic topology discovery to discover and display the ADCs attached to the data center
3. Topology diagrams displaying SDN, ADC ports, and connectivity information using LLDP
4. Periodic telemetry data collection to track app usage
5. Visibility dashboard for graphical and tabular display of virtual load balancer and endpoint details, making use of telemetry extension from the ADCs, additional information such as logs, active connections, traffic statistics
6. Supports application upgrades and database export and import for ease of setup migration
7. Supports report downloads in Excel

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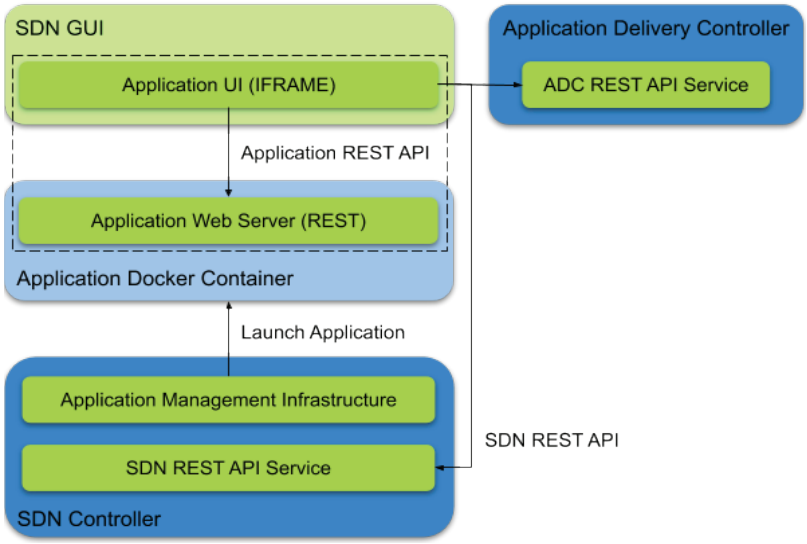
Solution Architecture

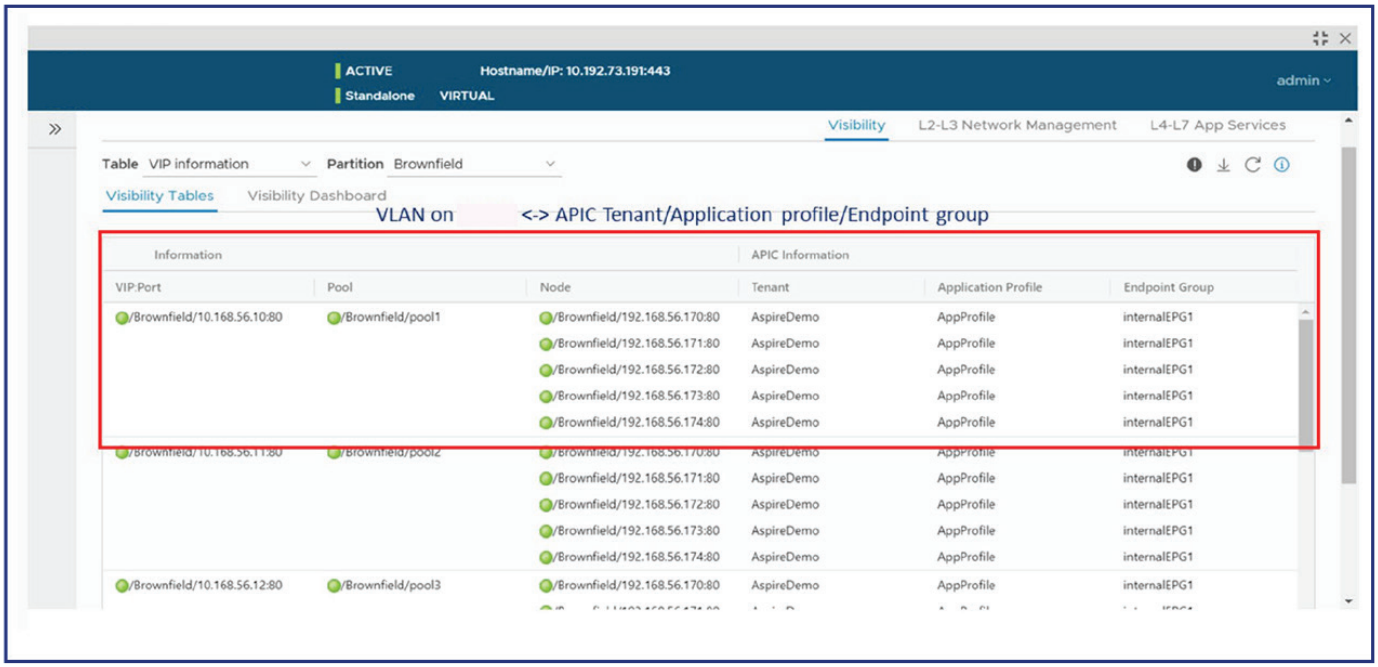


Value-Adds

The GS Lab | GAVS team released the first trial of the application with all basic use cases supported, in a short period of 11 weeks. Prior experience in SDN products enabled rapid turnaround of a well-tested, high-quality application that has been the highlight of multiple forums, webinars, and computer networking events. The application is in the featured applications section of the SDN marketplace website, with a total of 1354+ downloads since its first release.

The team found and reported multiple defects in the SDN product, that were fixed by the SDN provider. This helped improve their overall 3rd party integration infrastructure which was being used by this and many other applications. Due to the success of the application, the customer has come back to us with the prospect of one more such integration application with the same SDN provider.

Solution at Work



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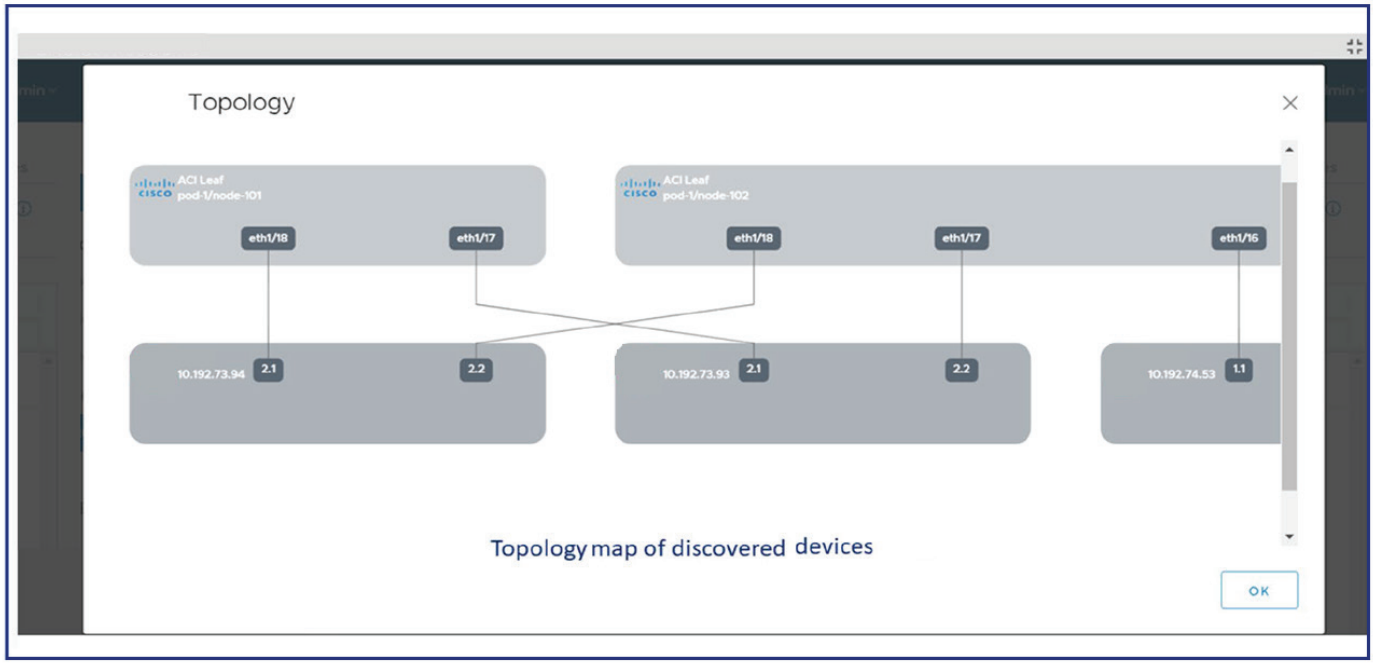

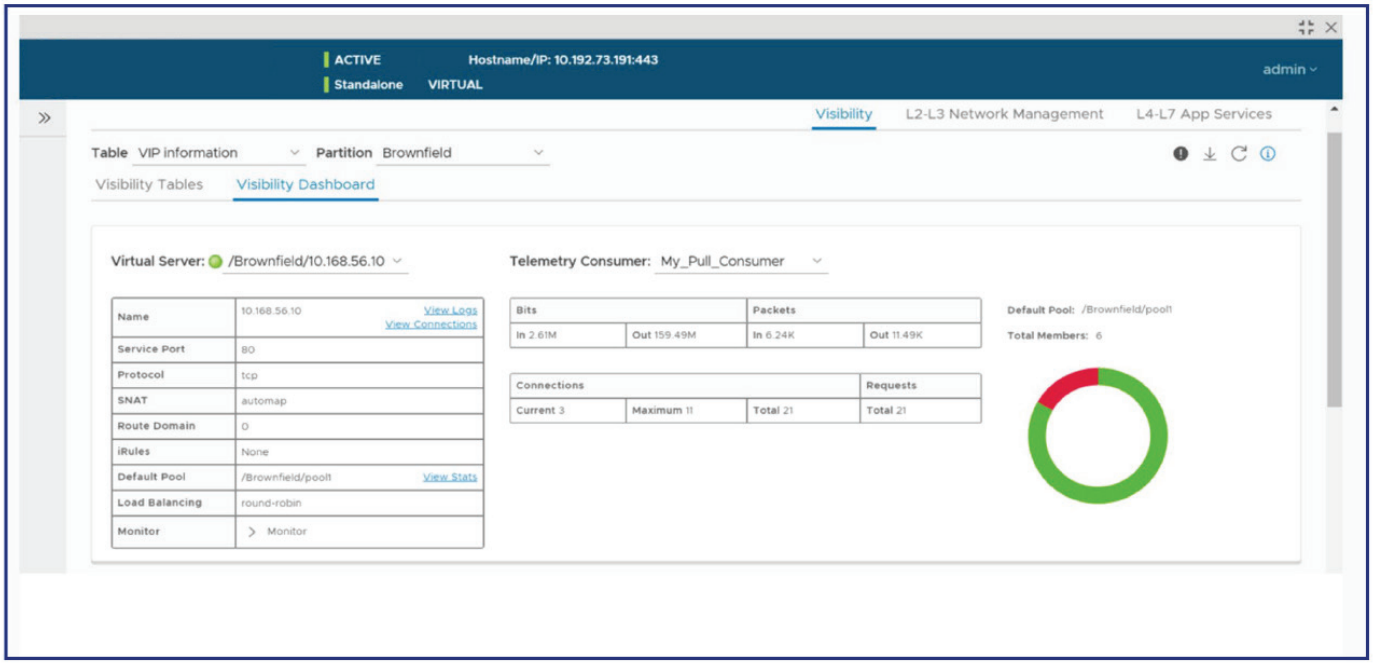

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