SOLUTION BRIEF

Automated External Access to Kubernetes Applications with A10 TKC

Overview

Organizations deploying Kubernetes (K8s) applications in multi-cloud and hybrid-cloud environments, expect to drive innovation with speed and agility, while leveraging the benefits of cloud such as elasticity and flexibility. However, soon they run into the challenge of providing external access to such applications (north-south traffic) in a simple and automated manner, while still retaining control, to ensure secure and reliable access to these applications.

Traditional deployment process of enabling such an external access, through manual provisioning of network resources and deployment of load balancers, is unable to keep pace with the requirements of Kubernetes applications, thereby becoming a bottleneck in the overall deployment of such applications.

A10 Networks, with its Thunder ADC and Thunder Kubernetes Connector (TKC), provides a solution that enables organizations to automate external access to Kubernetes applications (north-south traffic), while still retaining administrative control to enforce polices in a consistent manner. The solution simplifies operations for IT and security teams, while allowing DevOps teams to focus on their core tasks of developing and deploying Kubernetes applications to meet customer needs, thereby providing better business outcomes.

Challenge

Organizations deploying Kubernetes applications in multi-cloud/hybrid cloud environments face the challenge of making these applications accessible to the end users in a simple and automated manner, while still ensuring security and reliability.

Solution

A10 Thunder ADC along with Thunder Kubernetes Connector provides a solution that enables automated configuration of the Thunder ADC to load balance traffic to Kubernetes applications. The solution eliminates the need for a manual ticketing process for provisioning the necessary network resources and reduces potential errors in applying consistent security policies across public and private clouds.

Benefits

- Automated configuration of Thunder ADC based on real-time status of Kubernetes applications
- Easy integration into CI/CD pipeline for faster deployment
- Consistent security and business policies across multi-cloud/hybrid cloud environments
- Faster troubleshooting with a central point of control and visibility
- Flexible licensing with A10 FlexPool

The Challenge

Organizations deploying Kubernetes applications in public and private clouds have the challenge of making such applications accessible to the end-users, in a fast and easy manner, with minimal manual intervention. While Kubernetes provides a flexible and scalable platform to deploy and run applications, it does not provide an easy solution to make these applications accessible to the end users and relies upon third-party solutions for this.

Some of these solutions, such as those from public cloud providers, such as AWS and Azure, are specific to only one public cloud environment. For example, AWS has its own Elastic Load Balancing solution, which is different from Microsoft's Azure Load Balancer.

These disparate solutions, one for each cloud environment, increase management complexity, and result in a manual ticketing process to provision the required network resources, a process that could take days if not weeks. This slows down the overall DevOps cycle of developing and deploying new applications to achieve business goals. It also leads to inconsistent and insecure deployments, as each cloud provider's solution has its own unique configuration requirements.

The A10 Networks Solution

A10 Networks provides an application access solution that enables automated configuration of Thunder ADC as external load balancer for access to Kubernetes applications as they are deployed and scaled.

The solution consists of two entities: Thunder Kubernetes Connector (TKC) and Thunder ADC:

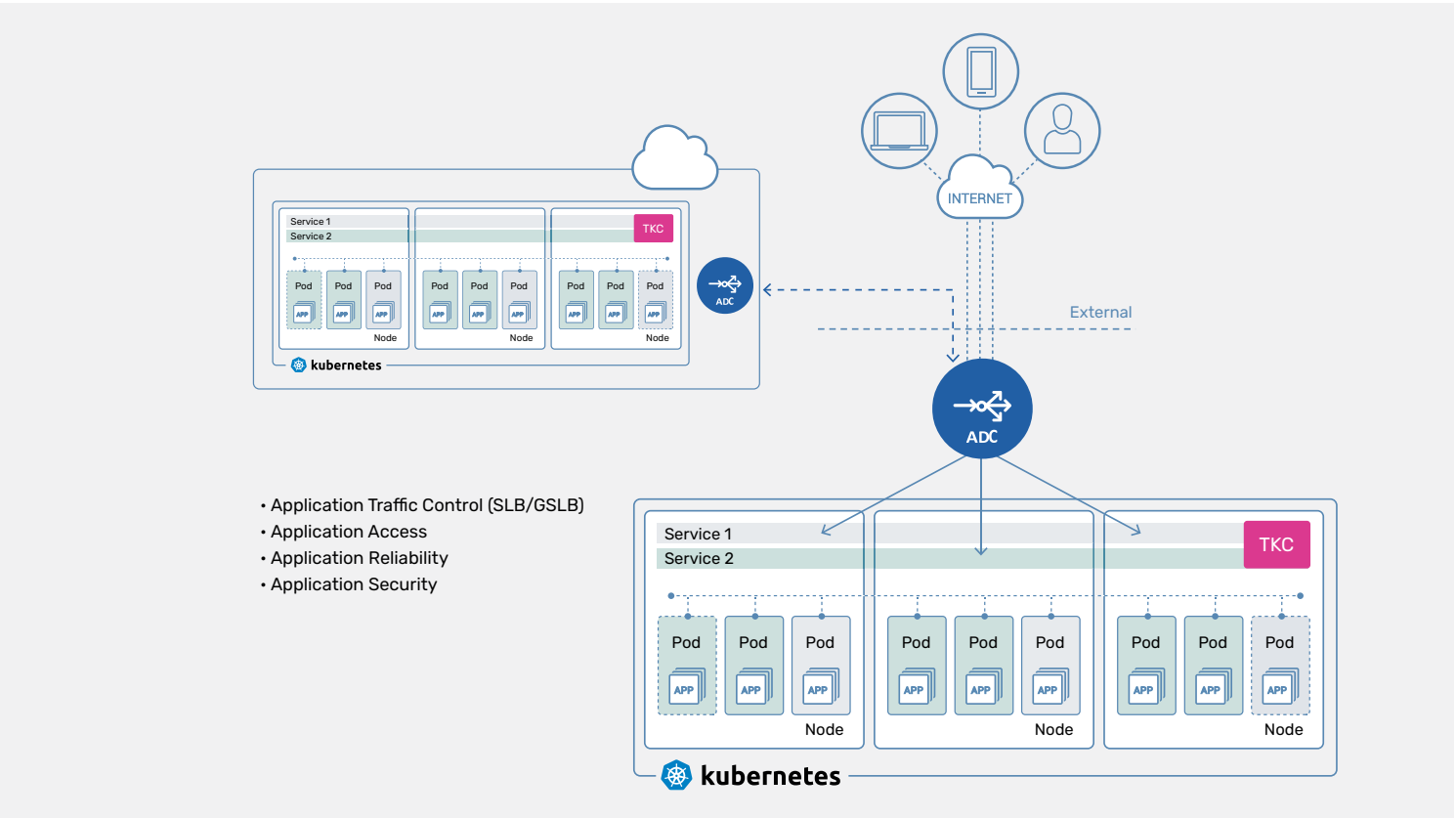

Figure 1: External access to Kubernetes applications in multi/hybrid cloud with A10 TKC and Thunder ADC

Thunder Kubernetes Connector: The TKC runs inside the Kubernetes cluster, monitoring the lifecycle of the Kubernetes applications, and automatically updates an external load balancer with information to route traffic to these applications. This eliminates the need for manual configuration of the external load balancer and speeds up the overall application deployment cycle.

Thunder ADC: The Thunder ADC is the external load balancer that sits in front of the Kubernetes applications and makes them accessible to end-users. Thunder ADC is available in multiple form factors (such as physical, virtual, bare metal, etc.) enabling the solution to be deployed in both multi-cloud and hybrid cloud environments. Deploying the same Thunder ADC solution across the clouds simplifies management since one no longer needs to manage and deploy multiple distinct types of load balancers from the various public cloud providers. It also enables enforcement of a consistent set of policies to access the K8s applications, thereby leading to a more secure and reliable deployment.

Features and Benefits

Thunder ADC and Thunder Kubernetes Connector together provide the following benefits when deploying Kubernetes applications in multi-cloud/hybrid cloud environments:

Automated configuration of load balancer: The TKC dynamically configures the Thunder ADC to load balance traffic to the K8s application, enabling external access to K8s applications, without requiring manual provisioning of resources. This eliminates both the delay and any potential errors associated with a manual deployment process.

Integration with CI/CD pipelines: With support for automation tools such as Terraform and Ansible, A10's solution can be easily incorporated into existing CI/CD pipelines, enabling faster and automated deployment of K8s applications.

Consistent security and business policies: With Thunder ADC as the front-end for applications in public and private clouds, operations teams can enforce a consistent of security policies across the clouds, leading to a more secure deployment. Similarly, they can apply other traffic management policies, such as those related to business needs in a more consistent manner. This also helps to avoid potential errors in porting configuration from one cloud deployment to another.

Faster troubleshooting: With all external traffic passing through the Thunder ADC, operations teams can get a centralized view of external access to application traffic and analytics, thereby enabling faster and proactive troubleshooting.

Flexible licensing: With A10's FlexPool, a software subscription model, organizations have the flexibility to allocate and distribute capacity across multiple sites as their business and application needs change.

Summary

Automated access to Kubernetes applications with TKC and Thunder ADC

With Thunder ADC and Thunder Kubernetes Connector (TKC), organizations can automate the process of providing external access to their Kubernetes applications in multi-cloud and hybrid cloud environments. The TKC monitors the Kubernetes applications, and updates the Thunder ADC, thereby eliminating the need for a manual ticketing process to provision the necessary network resources. The Thunder ADC acts as the load balancer that routes traffic to the applications, providing a central point of control and visibility into the application traffic.

With its support for automation tools such as Terraform and Ansible, A10 solution can be easily incorporated into existing CI/CD pipelines, leading to faster and easier deployment of Kubernetes applications.

Next Steps

For more information, please visit a10networks.com/products/thunder-adc/.

About A10 Networks

A10 Networks provides security and infrastructure solutions for on-premises, hybrid cloud, and edge-cloud environments. Our 7000+ customers span global large enterprises and communications, cloud and web service providers who must provide business-critical applications and networks that are secure, available, and efficient. Founded in 2004, A10 Networks is based in San Jose, Calif. and serves customers globally. For more information, visit A10networks.com and follow us @A10Networks.

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