Advanced Application Services for Kubernetes with F5 BIG-IP, NGINX, and Red Hat OpenShift

Shifting demand can degrade the performance of Kubernetes applications. Improve application speed, availability, security, and reliability with F5 and Red Hat.

Simplify Kubernetes management
Deploy and operate Kubernetes with adaptive load balancing, health insights, and consistent user experience for simplified management from edge to cloud.

Improve collaboration and visibility
Gain better visibility into your OpenShift environment for SecOps, NetOps, and DevOps teams to improve collaboration.

Accelerate app deployment
Empower developers with self-service capabilities and a single, consistent user experience to help build and deploy apps anywhere, resulting in faster releases.

Maximize productivity in dynamic environments
Ensure reliable app connectivity with tight integration and fast discovery of changes for increased productivity from edge to cloud.

Improving Performance and Reliability of Container Applications

Dynamic scaling in Kubernetes environments can result in slow performance and poor user experiences. This is often caused by frequent or lengthy configuration reloads, leading to connection timeouts and errors. As traffic demands shift, applications can become sluggish or unreliable.

In addition, hybrid environments increase the complexity of application delivery and day two operations. Challenges include:

- Insufficient visibility into application health and performance that makes troubleshooting difficult
- Traditional security models that do not work across distributed application environments
- Limited self-service capabilities for developers that slow down app releases
- Tool sprawl due to multiple on-premises and cloud tools and siloed technologies

Support Agile Development on Red Hat OpenShift

Red Hat® OpenShift® is the industry's leading hybrid cloud application platform for Kubernetes, delivering a consistent experience across public cloud, on-premises, hybrid cloud, or edge architecture. It reduces friction for developing, modernizing, deploying, running, and managing applications.

F5® BIG-IP® can monitor, scale, and secure microservices applications across OpenShift Container Platform clusters to support agile development as an external application delivery controller. Linking BIG-IP and OpenShift requires using a Kubernetes ingress interface. To support dynamic demand with secure and reliable performance, an enhanced ingress controller is needed that can provide sophisticated enterprise-class features to manage app connectivity in Kubernetes.

Achieve seamless traffic management across hybrid environments
Easily and intelligently manage ingress and egress application traffic with a unified data plane for a consistent experience across the cloud, on-premises, or at the edge.

Enhance application delivery with granular control
Achieve fast and reliable applications with granular north-south traffic control and cross-cluster application delivery.

Optimize application performance with real-time insights
Simplify troubleshooting and optimize application performance with high-speed logging and analytics.

Strengthen application security
Reduce potential points of failure by deploying integrated WAF and DoS protection closer to applications for built-in security.

Optimize performance with rapid response
Adapt to changing environments quickly with millisecond responses to configuration changes, DNS queries, and traffic spikes for unmatched performance.

F5 Ingress Controllers for Red Hat OpenShift

BIG-IP can connect to OpenShift via F5 BIG-IP® Container Ingress Services (CIS) or F5 NGINX® Ingress Controller. These methods can be used individually or in parallel as needed to support business objectives.

CIS integrates with OpenShift to dynamically create L4 and L7 services on BIG-IP systems and load balance network traffic across those services. By monitoring the orchestration API server, CIS can modify BIG-IP based on changes made to applications in OpenShift. Security and network operations teams may wish to use this option for monitoring and management of their container environment.

For DevOps teams or those that require a higher level of application performance, NGINX Ingress Controller is the most widely used ingress technology for containers. Part of NGINX's Connectivity Stack for Kubernetes, it provides enterprise-class availability, security, and visibility for Kubernetes apps with seamless integration into Red Hat OpenShift through the certified NGINX Ingress Operator. NGINX integrates with BIG-IP through IngressLink to create a faster connection with OpenShift, discovering and adapting to dynamic application changes in pods and workloads in milliseconds. It shifts control of routing and load balancing to the DevOps teams that are in charge of the applications themselves, helping accelerate app releases without compromising security or slowing down performance.

NGINX's Connectivity Stack for Kubernetes also includes F5 NGINX® Service Mesh for service-to-service connectivity, security, orchestration, and observability, and NGINX App Protect with a modern web application firewall (WAF) and denial-of-service (DoS) protection for Kubernetes apps and APIs.
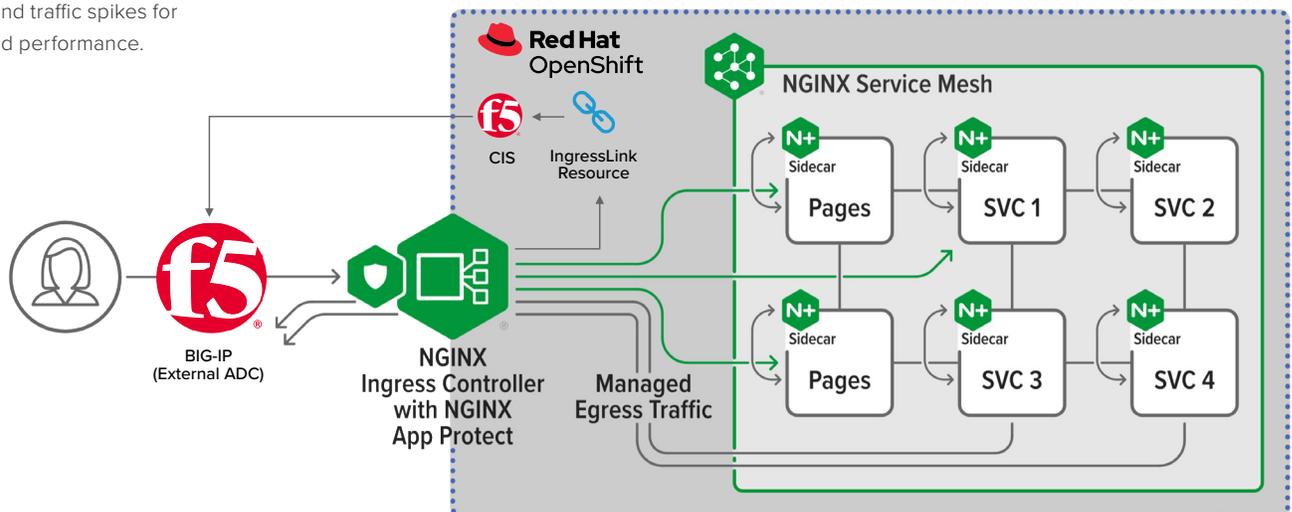

Figure 1: F5 NGINX Ingress Controller connects BIG-IP with Red Hat OpenShift environments for faster application delivery.

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Benefits of F5 and Red Hat

Together, F5 and Red Hat can optimize and accelerate containers at scale to improve performance and reduce complexity in a hybrid environment. Better visibility into applications enhances reliability and security. With consistency across environments, you can simplify operations and reduce tool sprawl. The combined solution improves business outcomes with increased agility, consistency, and continuity.

Learn more about F5 and Red Hat's partnership at f5.com/redhat