Solution Overview

F5 and NVIDIA Optimize AI-RAN, Distributed N6-LAN, and AI Edge Security

Elevate network performance and security with F5 BIG-IP Next Cloud-Native Network Functions powered by NVIDIA® BlueField™-3 DPUs, delivering unparalleled efficiency and protection for service providers' modern AI network demands.

Key Benefits

Enhanced Performance with Hardware Acceleration
Offloads critical network and security tasks to NVIDIA BlueField-3 DPUs to significantly boost throughput and reduce latency, ensuring optimal performance for demanding 5G and AI workloads.

Power Efficiency
Consolidates multiple services into a single, software-defined, hardware-accelerated platform to reduce physical footprint and power consumption, making it ideal for space-constrained edge environments.

Integrated, Carrier-Grade Security
Deploys comprehensive security features—including firewall, DDoS protection, DNS, CGNAT, and policy enforcement—within a unified, cloud-native architecture, ensuring robust protection for dynamic 5G and AI environments.

Navigating the Complexities of Modern Network Demands

In the rapidly evolving landscape of telecommunications and AI-driven connectivity, service providers face unprecedented challenges. The rise of 5G networks, generative AI workloads, and edge computing has introduced new levels of complexity in managing and securing network infrastructures. As data volumes surge and latency requirements tighten, traditional network solutions often fall short, unable to meet the high throughput and low latency demands of modern applications.

Compounding these challenges is the need for efficient resource utilization. Edge environments are constrained by limited space and power, making it critical to deploy solutions that minimize physical footprint and energy consumption while delivering robust performance. The increasing prevalence of distributed architectures further complicates operational management, demanding seamless integration and automation to maintain service agility and reliability.

The security landscape is becoming more intricate, with advanced threats targeting the ever-expanding attack surface of interconnected devices and networks. Ensuring comprehensive protection across multi-tenant environments requires a holistic approach to security—one that integrates firewalls, DDoS mitigation, and zero-trust principles. As organizations strive to stay ahead in this competitive era, the need for innovative, scalable, and secure network solutions has never been more critical.

Key Features

Automate Scalability and Operational Efficiency
Offload network traffic Microservices-based CNFs support seamless auto-scaling and continuous delivery, enabling agile deployments that reduce operational complexity and total cost of ownership.

Maximize CPU Resources
By offloading and accelerating network and security functions on the DPU, this solution frees up CPU resources, allowing them to be allocated to critical business applications and services, driving higher value and new revenue opportunities.

Achieve Zero-Trust Infrastructure
NVIDIA BlueField-3 DPUs provide a secure foundation to run network and security workloads, fully isolated from the host, enhancing the security posture of the system.

Transforming Network Performance and Security

As service providers see the AI connectivity landscape further evolving, traditional network infrastructures must adapt to meet the demands of AI applications. F5 BIG-IP Next Cloud-Native Network Functions (CNFs) deployed on NVIDIA BlueField-3 DPUs is a purpose-built solution designed to tackle the complexities of today's network challenges. By combining the agility of cloud-native architectures with the accelerated data capabilities of the BlueField-3 DPU, BIG-IP Next CNFs provide unparalleled performance, efficiency and security.

Offloading critical network and security tasks to the BlueField-3 DPUs significantly boosts throughput and reduces latency, ensuring optimal performance for demanding 5G and AI workloads. This hardware-accelerated approach allows organizations to manage increasing data volumes without sacrificing speed or efficiency. By consolidating multiple services into a single, compact platform, the solution minimizes physical footprint and power consumption, making it ideal for space-constrained edge environments.

AI-RAN

Offloading critical network and security tasks to the NVIDIA BlueField-3 DPUs significantly boosts throughput and reduces latency, ensuring optimal performance for AI-RAN deployments. This hardware-accelerated approach allows organizations to manage increasing data volumes without sacrificing speed or efficiency. The integration of F5's carrier-grade security features—such as firewalling, DDoS protection, and policy enforcement—ensures robust protection and reliability for AI-driven radio access networks.

Distributed N6-LAN

For service providers deploying distributed N6-LAN architectures, the F5 BIG-IP Next CNFs on NVIDIA BlueField-3 DPUs offer a compact, power-efficient solution. By consolidating multiple services into a single, unified platform, this solution reduces physical footprint and power consumption, making it ideal for space-constrained environments. The seamless integration and automation capabilities ensure efficient resource utilization and streamlined operations.

AI Edge Security

Security concerns are paramount in the modern network landscape, especially at the edge. The F5 BIG-IP Next CNFs provide comprehensive security features—including firewall, DDoS protection, DNS, CGNAT, and policy enforcement—within a unified, cloud-native architecture. This integrated approach ensures robust protection across multi-tenant environments, addressing the growing security concerns in edge AI deployments. The microservices-based CNFs enable seamless auto-scaling and continuous delivery, reducing operational complexity and ensuring that networks remain responsive and adaptable.

Microservices-based CNFs enable seamless auto-scaling and continuous delivery, reducing operational complexity and ensuring that networks remain responsive and adaptable. By freeing CPU resources for critical business applications, this solution not only enhances performance but also drives new revenue opportunities for the innovations of tomorrow.

A Future-Ready Solution in the AI Era

In an era where 5G and AI technologies are redefining connectivity, the need for advanced network solutions has never been more critical. F5 BIG-IP Next CNFs deployed on NVIDIA BlueField-3 DPUs offer a transformative approach to tackling the most pressing challenges faced by modern network infrastructures. By leveraging the power of hardware acceleration and the flexibility of cloud-native architectures, this solution ensures that organizations can meet the demands of high-throughput, low-latency applications with unprecedented efficiency.

This solution not only enhances network performance and security but also optimizes resource utilization. The compact and power-efficient design is particularly suited for edge envi-ronments where space and energy constraints are significant. By integrating comprehensive security features within a unified platform, BIG-IP Next CNFs simplify the deployment and management of robust, zero-trust network architectures, safeguarding against the evolving threat landscape.

Ultimately, BIG-IP Next CNFs empower service providers, telecoms, and large enterprises to achieve higher ROI on their networks. This modern approach facilitates the seamless rollout of new services, supports the scalability needed for AI and 5G innovations, and drives operational efficiency. By adopting this solution, organizations can unlock new revenue opportunities and maintain a competitive edge in the rapidly advancing world of digital connectivity.

Next Steps

Contact F5

Deploying NVIDIA accelerated computing at scale? Find out how F5 works with NVIDIA BlueField-3 DPUs and enables you to achieve greater efficiency, performance, and security for AI workloads. Contact us

Explore BIG-IP Next CNFs

Enable secure, automated, and scalable cloud-native solutions. Learn more

F5 Solutions, Powered by NVIDIA Accelerated Computing

F5 taps into NVIDIA technologies to create AI infrastructure solutions, which provide application delivery and security for AI models and apps to scale from cloud to edge. Explore the collaboration