



F5 Service Provider Solutions: Optimize, Secure, and Monetize Your Network



The environment for communications service providers has never been more challenging. Traditional services such as voice and messaging are in decline. At the same time, smartphones and other connected mobile devices, cloud-based services, high data-consumption mobile applications, and advanced 4G LTE network deployments have led to massive and sustained growth in data usage. As a result, average revenue per user (ARPU) has trended flat to negative while operating costs continue to rise.

F5 offers a broad portfolio of carrier-grade solutions tailored to service providers, so you can respond to this challenging environment with creative and innovative strategies to improve profitability by bolstering ARPU and reducing infrastructure costs simultaneously.

F5® solutions are based on an intelligent services framework that delivers multiple services on a unified platform. With both carrier-grade hardware and virtual editions, service providers can use the F5 platform to simplify the network, decrease time to market, reduce capital and operating costs, improve service delivery performance and security, and monetize network services. F5 also delivers mature Diameter signaling and interworking solutions for a smooth migration to 4G LTE. F5 devices offer any-service-on-any-blade provisioning and are Network Function Virtualization (NFV) and software-defined networking (SDN) ready for a flexible and dynamic service architecture that can respond efficiently to traffic conditions and planning requirements across the application, control, and data planes.

F5 Service Provider Solutions: Optimize, Secure, and Monetize Your Network

Intelligent Traffic Management and Policy Enforcement Solutions

F5 offers intelligent traffic management and policy enforcement solutions to manage data traffic, conserve network resources, and quickly deliver more profitable services. F5 BIG-IP® Policy Enforcement Manager™ (PEM) offers subscriber-aware and context-aware solutions with a full proxy architecture and rich IP capabilities for critical traffic visibility and analytics and sophisticated traffic steering capabilities, including the ability to inspect and route traffic based on data type and subscribers' profiles.

In addition, BIG-IP PEM offers multi-platform support for load balancing traffic, monitoring network health, and steering traffic based on subscriber type, server availability, and network policies. These capabilities help improve service availability, performance, and reliability in the most demanding conditions.

Diameter Signaling Solutions

F5's industry-leading Diameter routing, load balancing, and gateway connectivity solution gives you the ability to manage, scale, and maximize the profit from your 4G LTE deployments. As the market's most mature Diameter solution, the F5 Traffic™ Signaling Delivery Controller™ (SDC) gives you the control you need to manage your network's Diameter signaling and achieve your business objectives.

The SDC consolidates a Diameter Routing Agent (DRA), a Diameter Edge Agent (DEA), a Diameter load balancer, and a Diameter interworking function on a single platform. You benefit from context-aware intelligent routing, reliable load balancing, and flexible, seamless connectivity. The result is a simpler and more cost-effective control plane architecture.

The SDC offers features that include:

- Support for all Diameter interfaces (currently more than 50 interfaces).
- Central maintenance and management of routing and failover.
- Routing based on any combination of attribute-value pair (AVP) content.
- Network topology hiding for third-party interfaces.
- Network visibility and analytics for real-time troubleshooting and capacity planning.

CGNAT and IPv6 Migration Solutions

F5 provides a high-performance and scalable solution to mitigate IPv4 address depletion and enable seamless migration to IPv6. BIG-IP® Carrier-Grade NAT (CGNAT) functions as a native IPv4 to IPv6 gateway for all advanced services by transparently managing application delivery in both networking topologies. It provides an opportunity to support IPv4 address mitigation or start migrating either clients or servers—or both simultaneously—to IPv6 networks without affecting clients, application services, and both sides of the network all at once.

BIG-IP CGNAT delivers capabilities such as:

- IPv4/IPv6 dual stack, NAT44 and NAT444 in N:1 or 1:1 configurations, and NAT (PAT) support.
- Deterministic NAT capability and Endpoint Independent Mapping/Filtering, including full cone NAT features.
- NAT64 and DNS64 resolution services, reverse proxy NAT64 and NAT46, and Dual-Stack Lite (DS-Lite) termination.

F5 Service Provider Solutions: Optimize, Secure, and Monetize Your Network

- High-speed and reliable system logging with customizable logs, such as MSISDN/IMSI and destination URL/URI fields insertion.

Control Plane Messaging Solutions

As mobile subscribers use more services, existing control plane infrastructure will become overloaded and strain to handle the traffic loads. F5 offers comprehensive control plane solutions that optimize, intelligently scale, and securely manage messaging interfaces such as RADIUS, DNS, and SIP. F5 provides DNS solutions for all critical footprints in the carrier's network—from local DNS and user authoritative DNS to infrastructure DNS supporting machine-to-machine connectivity. F5 solutions ensure device, service, and application resiliency through dynamic DNS resolution and high-performance query handling.

F5 BIG-IP® Global Traffic Manager™ (GTM) employs a range of global load balancing methods and intelligent monitoring specific to each device, application, and service, along with inspection of the client origination to provide the best response according to your business policies and current network and user conditions. Using high-performance and flexible DNS services, BIG-IP GTM scales and secures your DNS infrastructure from distributed denial-of-service (DDoS) attacks, provides white and black listing, and delivers a complete, real-time DNSSEC solution. With DNS Express™ and DNS caching and resolving, BIG-IP GTM enables fast, same-site responses in a shorter period of time.

SIP and RADIUS protocols are also critical components of control plane architectures. F5 BIG-IP® Local Traffic Manager™ (LTM) provides intelligent SIP traffic management solutions for high scalability, availability, and reliability to the Session Border Controller, media servers, and many other SIP devices. In addition, BIG-IP LTM accelerates, optimizes, and scales authentication, authorization, and accounting (AAA) infrastructure server deployments and uses an advanced health monitor to ensure traffic is sent only to available RADIUS servers.

Security Solutions

F5 offers integrated, high-performance ICSA Labs certified security solutions, such as the F5 application delivery firewall, that protect your entire infrastructure and scale to perform under the most demanding conditions. You get the intelligence and flexibility you need to enhance and simplify network security in the ever-changing and increasingly threatening landscape, and a common platform to deliver applications and improve responsiveness.

F5 security solutions enable service providers to support:

- A stateful, full-proxy network firewall with unparalleled session scale, throughput, and connections per second.
- Defense against DDoS attacks across all layers: network, session, and application, including SYN floods and IP port scan attacks, DNS floods, and SQL injections.
- Unmatched flexibility and control of network traffic with F5 iRules®—a scripting language you can use to provide dynamic protection against newly uncovered threats.
- Integration with leading web application scanning tools for comprehensive vulnerability assessments and automated security policy development.

SDN and NFV Solutions

F5 solutions provide service providers with the ability to move to software-defined networking (SDN) and Network Function Virtualization (NFV) architectures. F5 products are available across a variety of platforms,

F5 Service Provider Solutions: Optimize, Secure, and Monetize Your Network

from highly scalable physical devices with virtualization options to virtual editions ready to run F5 solutions on all major hypervisors.

The flexible and programmatic F5 APIs give service providers the tools to tie F5 solutions into the virtualization management and orchestration systems for an agile and dynamic network. This includes the ability to monitor service utilization, proactively add resources as demand increases, and deprovision resources when demand decreases.

F5 Products for Service Provider Solutions

Solutions	F5 Products
Intelligent Traffic Management and Policy Enforcement	BIG-IP Local Traffic Manager (LTM) BIG-IP Policy Enforcement Manager (PEM)
Carrier-Grade NAT and IPv6 Migration	BIG-IP Carrier-Grade NAT (CGNAT)
Scaling and Securing the Control Plane	BIG-IP Global Traffic Manager (GTM) BIG-IP Local Traffic Manager (LTM)
Diameter Solutions	F5 Traffic Signaling Delivery Controller (SDC)
Security Solutions	F5 Application Delivery Firewall Solution: <ul style="list-style-type: none">• BIG-IP® Advanced Firewall Manager™ (AFM)• BIG-IP® Access Policy Manager® (APM)• BIG-IP® Application Security Manager™ (ASM)• BIG-IP Local Traffic Manager (LTM)
SDN/NVF and Managed Service Provider Solutions	BIG-IP Local Traffic Manager (LTM) BIG-IP Policy Enforcement Manager (PEM) BIG-IP Global Traffic Manager (GTM) F5 Traffic Signaling Delivery Controller (SDC) F5 Application Delivery Firewall Solution: <ul style="list-style-type: none">• BIG-IP Advanced Firewall Manager (AFM)• BIG-IP Access Policy Manager (APM)• BIG-IP Application Security Manager (ASM)• BIG-IP Local Traffic Manager (LTM)

More Information

To learn more about F5 solutions for service providers, visit the **Service Provider** page on **f5.com**.

F5 Networks, Inc. 401 Elliott Avenue West, Seattle, WA 98119 888-882-4447 www.f5.com

F5 Networks, Inc.
Corporate Headquarters
info@f5.com

F5 Networks
Asia-Pacific
apacinfo@f5.com

F5 Networks Ltd.
Europe/Middle-East/Africa
emeainfo@f5.com

F5 Networks
Japan K.K.
f5j-info@f5.com

