



## Carrier-Grade NAT and IPv6 Gateway

The shrinking number of available Internet Protocol version 4 (IPv4) addresses and the exploding number of devices that require access to the Internet means that service providers are under pressure to transition from the universal IPv4 standard to the newer IPv6. Not only do service providers need to make the transition to IPv6 in order to take advantage of benefits such as auto-configuration, simpler route tables, and IPSec, but they must also do so while still supporting IPv4. F5® provides seamless support for both IPv4 and IPv6 networks, enabling service providers to transparently manage application delivery, availability, performance, and security between both network topologies at one central location.

### Managing IPv4 Address Depletion and Migrating to IPv6

Service providers face two primary challenges with their IP address space: the exhaustion of IPv4 addresses and the transition to IPv6 addresses. Evident for years now, the situation has steadily worsened with sustained subscriber growth, device proliferation, and the rise of always-on connections.

To mitigate short-term IPv4 address exhaustion while developing longer-term plans for IPv6, many service providers first implement a carrier-grade network address translation (CGNAT) solution in their core networks. These solutions relieve the constraints in available IPv4 addresses by enabling translation between private and public IPv4 addresses and public IPv4 addresses in N:1 or 1:1 configurations.

However, service providers are not able to simply flip a switch to make all applications, services, and equipment IPv6-capable and ignore IPv4 because customers and Internet content will inevitably continue to run on IPv4 for years to come. To successfully transition to IPv6, service providers must be able to support IPv4 and IPv6 simultaneously across the data center, network infrastructure, and security systems on a wide range of platforms and between multiple hosting locations. Plus, they must have the capabilities to support simultaneous implementations of IPv6-enabled devices, such as broadband modems and mobile devices, as well as IPv6-enabled Internet content that proliferates from major content providers.

### F5 Solution

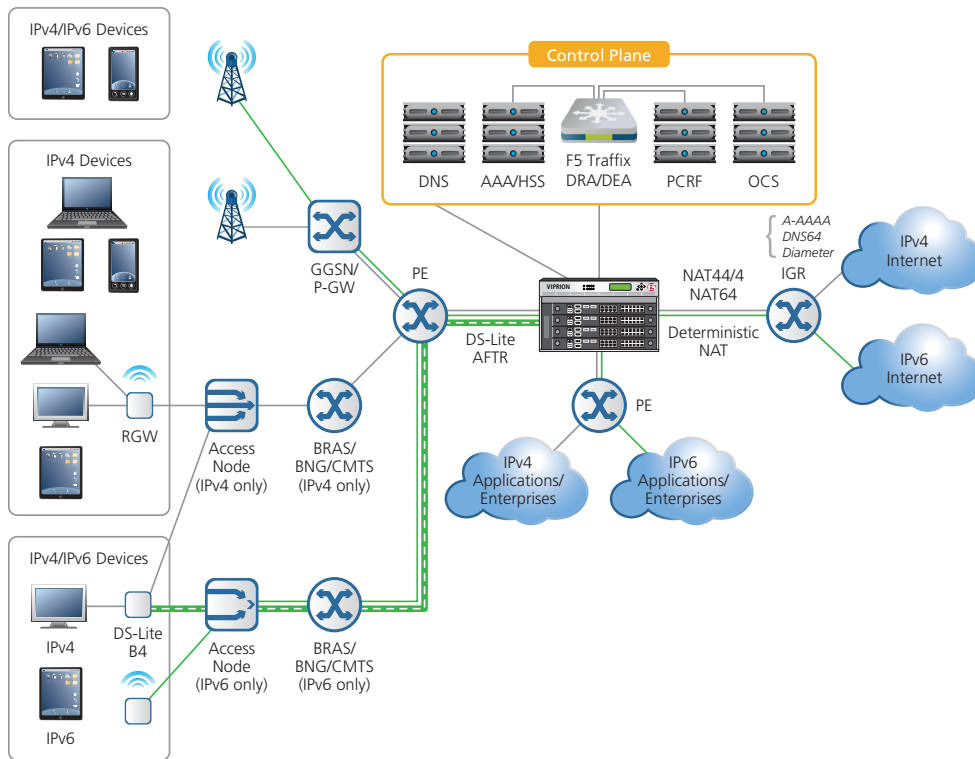
The F5® BIG-IP® system provides a high-performance, scalable CGNAT solution for IPv4 address translation. The BIG-IP platform also functions as a native IPv4-to-IPv6 gateway for advanced services by managing application delivery in both networking topologies. Service providers can support IPv4 address mitigation and simultaneously migrate clients and servers to IPv6 networks—at strategic points of control at the core network or in the data center.

### Key features and benefits

- **Carrier provider scalability**— Scales to handle millions of subscribers
- **Full support for core features**— Supports NAT44/64, DNS64, Dual Stack Lite, and deterministic NAT
- **Superior logging**— Provides high-speed, reliable, and customizable logging capabilities
- **Unified platform**— Consolidates traffic management and security functions in a single platform
- **Granular policy control**— Customizable scripting language, iRules®, for tight control over policies with unequaled flexibility
- **Reduced costs**— Lower deployment and operational costs

Specifically, the BIG-IP platform provides the following:

- IPv4 and IPv6 Dual Stack
- NAT44 and NAT444 translation between private IPv4 addresses and public IPv4 addresses in N:1 or 1:1 configurations
- NAPT (PAT) to use both private IPv4 addresses and specific port numbers during translations in order to exponentially scale available source addresses
- Deterministic NAT capability that maps private IP addresses to public IP addresses and reduces logging requirements
- Endpoint Independent Mapping/Filtering, including full cone NAT feature set
- NAT64 and DNS64 resolution services, including reverse proxy as a way to migrate easily to IPv6
- Dual-Stack Lite termination to deploy customer devices that use global IPv6 addresses and encapsulate IPv4 packets into IPv6 tunnels within an IPv6 network
- High-speed and reliable system logging with integrated load balancing to a data storage server pool in order to comply with legal intercept and regulatory requirements



F5 provides a scalable and cost-effective solution for IPv4 address depletion, along with an integrated solution for managing a controlled IPv4-to-IPv6 migration.

## Learn more

For more information about IPv4 and IPv6 solutions, please see the following resources or search [f5.com](http://f5.com).

### Products and solutions

[BIG-IP Product Family](#)

[iRules](#)

### White papers

[Managing the Migration to IPv6 Throughout the Service Provider Network](#)

### Solution profiles

[Securing and Scaling the Control Plane](#)

[Intelligent Traffic Management](#)

[Application Aware Services and Cloud Delivery](#)

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