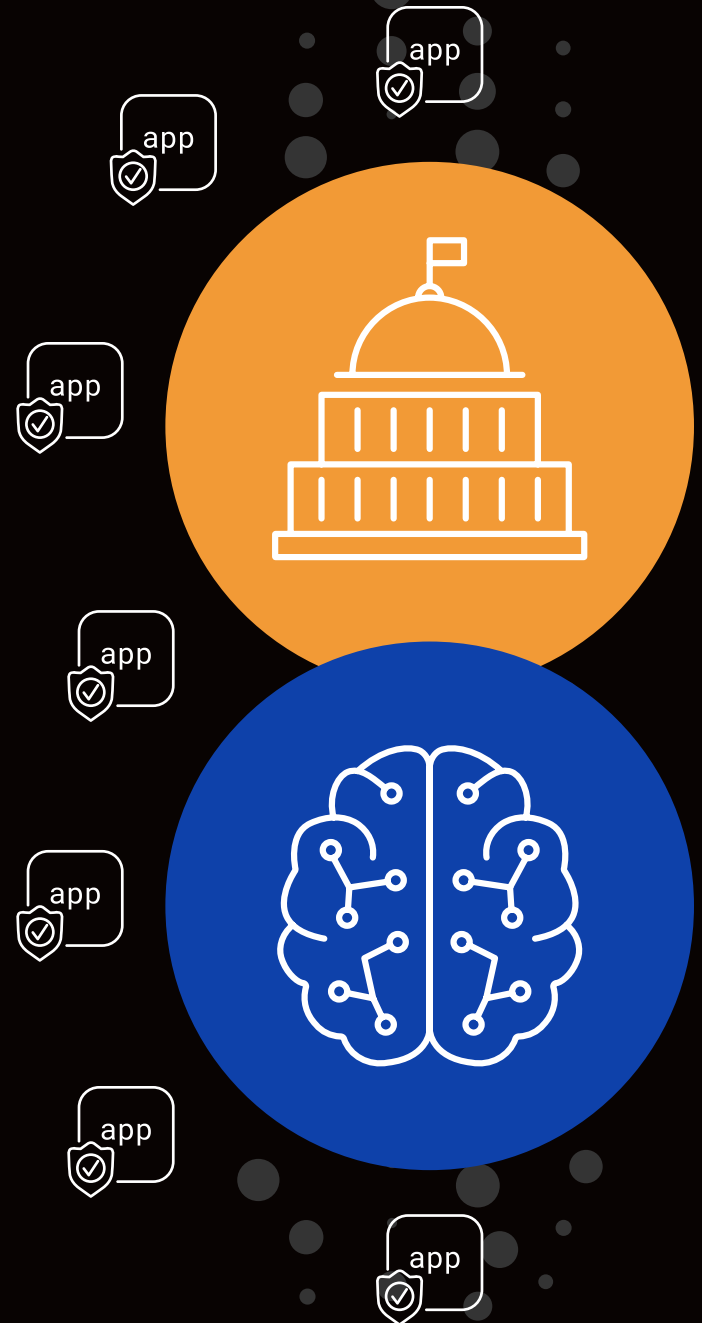# Modernizing Public Sector IT with F5 and AWS

Provide reliable services for education and government with secure apps and infrastructure.

# Contents

# Modernization Drivers

Public sector organizations are in varying states of digital transformation. Some are still adopting the cloud while others are modernizing applications and embracing distributed architectures. No matter where an organization is in its journey, many of the drivers are the same.

### Aging infrastructure and legacy systems

According to government leaders surveyed, outdated software and hardware are some of the biggest barriers to tech modernization efforts at their agency.[1]

### Cybersecurity threats

Ransomware is a top security risk in the public sector, and 79% of leaders say they don't have the necessary workforce to meet current and future demand for managing cloud services.[2]

### Cost reduction and operational efficiency

Federal agency leaders agreed that adopting emerging technologies will help increase overall efficiency (86%) and reduce operational costs (77%).[3]

### Need for digital services

Tied with cybersecurity as the top priority for state CIOs in 2024, this encompasses improving and digitizing the citizen experience, accessibility, and identity management.[4]

While leaders believe their agencies will benefit from modernization and emerging technologies, barriers remain. Nearly two-thirds of federal government agencies are concerned they don't have the right infrastructure in place to adopt emerging technologies. [5] Insufficient funding, difficulty finding skilled employees, and security threats also impede modernization efforts.

# Cloud Adoption in the Public Sector

Cloud has become common for many public sector organizations as part of their infrastructure modernization, and 60% of state IT organizations have now incorporated the cloud into their operations.[6] Moving operations to the cloud offers many benefits for public sector organizations, including:

## Cost savings

Predictable pricing, lower prices through scale, and change from CapEx to OpEx.

## Innovation

Easy to experiment, deploy new applications, and scale quickly with demand.
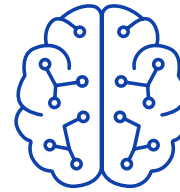
## Flexibility

Cloud supports multiple languages and architectures with many services to choose from.

## Security

Cloud providers offer security certifications, encryption, and physical security to protect infrastructure.

# Over 7,500

government agencies and 14,000 educational institutions use AWS for flexible and affordable technology solutions.

While the stage of cloud adoption can vary, every public sector organization needs to ensure the security and availability of their apps and data.

The relationship of AWS and F5 enables an extra layer of security for your mission-critical apps. F5 solutions in the AWS Marketplace span application and API security, performance, and connectivity to make the most of your apps in the cloud.

# Secure App Modernization

App modernization improves scale and flexibility of applications, which is key to providing better services to citizens and employees. AWS offers multiple pathways for app modernization, including:

### Kubernetes
Run Kubernetes apps on AWS to increase reliability, security, and scalability with common tooling across environments and AWS service integration.

### Serverless
Easily scale and manage cloud applications with a serverless model that shifts much of the compute resource management to AWS.

### Modern DevOps
Leverage DevOps services and tools to ensure security and governance while rapidly building and delivering new products.

Securing the app modernization journey is critical; however, often organizations struggle to balance development speed with security needs. Mitigating application vulnerabilities during development can significantly improve overall security. F5 makes this easier with security tools that can be integrated into the CI/CD pipeline, meaning you can release apps that are secure from the start.

**F5 security helps you:**

### Shift Left
Application security is intrinsically integrated into the application development lifecycle, regardless of architecture, cloud, or framework.
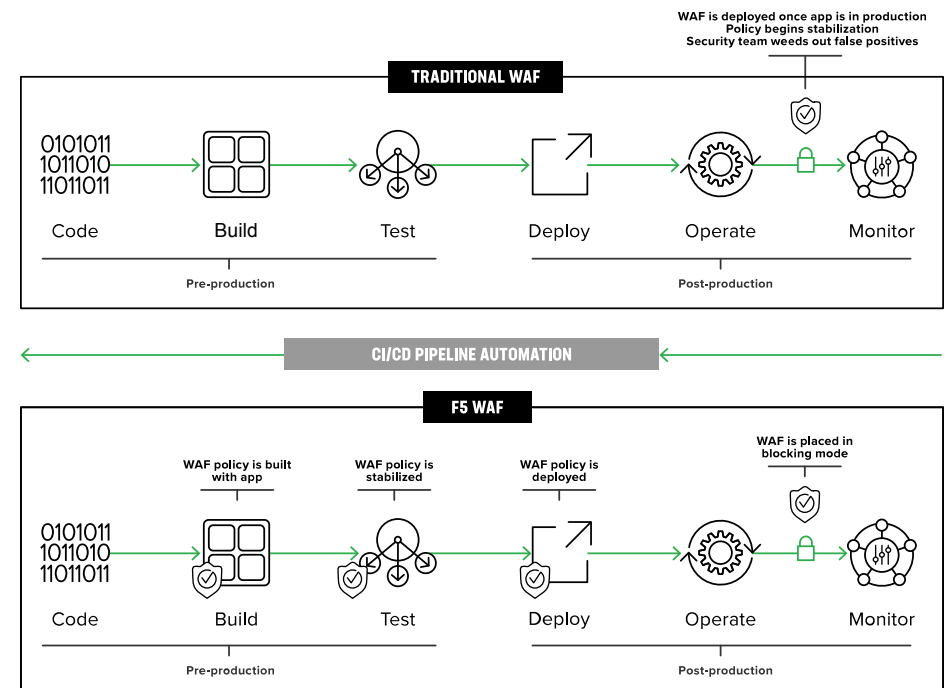
### Reduce Complexity
F5 streamlines security across clouds, datacenters, and on premises architectures for consistent policy enforcement.

### Maximize Usability
F5 solutions prevent compromise with minimal friction and false positives—encouraging public adoption.



WAF is deployed once app is in production
Policy begins stabilization
Security team weeds out false positives

**TRADITIONAL WAF**

0101011
1011010
11011011

Code | Build | Test | Deploy | Operate | Monitor

Pre-production | Post-production

**CI/CD PIPELINE AUTOMATION**

**F5 WAF**

WAF policy is built with app | WAF policy is stabilized | WAF policy is deployed | WAF is placed in blocking mode

0101011
1011010
11011011

Code | Build | Test | Deploy | Operate | Monitor

Pre-production | Post-production

# Prevent Bot-Driven Fraud and Disruption

Bots are another barrier to successful modernization. With increasing sophistication, bots mimic human behavior to avoid detection, committing fraud and DDoS attacks.

Bots target processes like user logins and password change flows to attempt to take over user accounts or create fake accounts. Botnets are also commonly used for DDoS attacks, which have shifted to target the application layer. In 2022, there was a 165% increase in application-layer attacks, while volumetric and protocol-based attacks decreased.[8]

F5 lets you add sophisticated bot and DDoS mitigation to AWS. Prevent volumetric DDoS attacks or those that target the application layer before they can cause outages or slowdowns for legitimate users. Block sophisticated bots that engage in account takeover fraud, content scraping, and more, and monitor your web pages in real time for suspicious code that could put accounts and data at risk—all without adding work for your users.

Prebuilt connectors make it easy to deploy F5 protection anywhere you need it, including content delivery networks, application delivery controllers, e-commerce platforms, and clouds. F5 uses advanced code obfuscation to prevent reverse engineering by attackers, having developed the first virtual machine (VM)-based obfuscation defense in JavaScript that uses telemetry encryption to prevent attackers from breaking detection methods.

## Stealing millions in student aid

# >$5M

Suspected bots represented 1 in 4 applicants to California community colleges in January 2024. These fraudsters collect grant money meant for education and vanish. Between September 2021 and January 2024, that totaled more than $5 million in federal aid and nearly $1.5 million in state and local aid.[7]

# Meet Compliance

Most public sector organizations have a number of regulations with which they need to comply.

For U.S. Federal Government Agencies, AWS GovCloud offers secure cloud solutions that are operated by employees who are U.S. citizens on U.S. soil. AWS GovCloud complies with regulations including:

- FedRAMP High baseline
- DOJ's Criminal Justice Information Systems (CJIS) Security Policy
- U.S. International Traffic in Arms Regulations (ITAR)
- Export Administration Regulations (EAR)
- Department of Defense (DoD) Cloud Computing Security Requirements Guide (SRG) for Impact Levels 2, 4 and 5
- Federal Information Processing Standard (FIPS) 140-2
- IRS-1075

F5 solutions for application and data security also comply with government regulations such as:

- FISMA
- FIPS 140-2 / 140-3
- Common Criteria Certification
- Commercial Solutions for Classified (CSfC)
- Department of Defense Information Network Approved Product List

The world's largest government entities and educational institutions rely on F5, including all 15 executive departments of the U.S. Cabinet.[9]

## Improve App Performance, Scalability, and Resilience

F5 lets you bring familiar application availability, performance, and security solutions from on-premises deployments to the cloud. F5 solutions for load balancing, traffic optimization, and scale keep applications performing at speed whether they're in AWS or other environments. Optimize applications with real-time protocol and traffic management decisions for fast performance and increased scale without complexity.

For container environments such as Kubernetes, you can add advanced application services such as load balancing to ensure successful app deployments while improving scale, availability, and visibility.

Increase resilience with consistent, scalable security in every environment. F5 provides app and API protection with a single console for full visibility and simplified management. Easily monitor and troubleshoot applications to maintain the performance your users need.

## Connecting apps across clouds

As you move more apps to a multicloud environment, networking services across clouds becomes tricky, often involving multiple ad hoc connections. F5 can connect clouds or apps across environments with simple, one-click provisioning that avoids complex networking issues. Securely and reliably connect apps in AWS with those in other clouds, on premises, or at the edge to improve resilience and flexibility.

# Prepare for the Future

Modernization is an ongoing journey. While some organizations are focused on cloud migration or app modernization, others are looking to the future—to technologies such as artificial intelligence (AI) and machine learning.

Emerging technologies are expected to improve public services through increased efficiency and lower costs. For example, AI chatbots can answer questions outside of business hours while real-time data analysis can improve public safety with accurate and up-to-date information.

With a foundation of secure, flexible apps and infrastructure, organizations can start to explore emerging technology. Working with experienced partners also leads to faster success. With over 20 years of AI experience, AWS helps organizations unlock the value of their data using AI backed by end-to-end security, privacy, and governance.

F5 is also working to make AI both easy and safe to consume and use. As F5 security solutions integrate AI, they will offer advanced detection and protection against threats that accompany emerging technologies. This will allow organizations to adopt emerging technologies with the confidence that they'll remain secure.
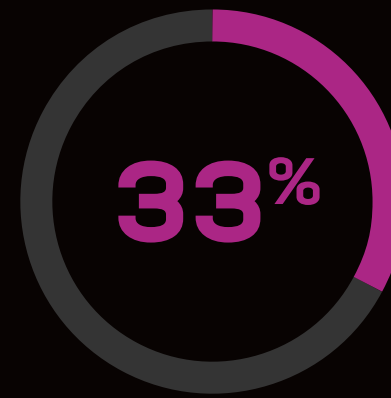
## Emerging technologies

**95% of government agency leaders surveyed** say that over the next five years, they plan to invest in emerging technologies, including:[10]

**53%**

**Cloud Networks**

**35%**
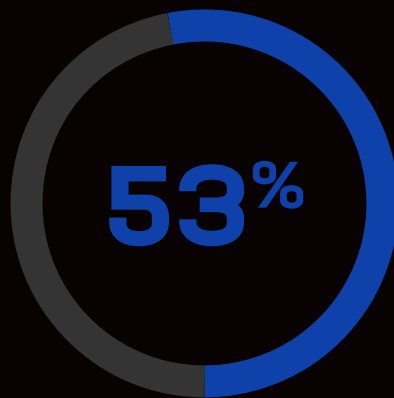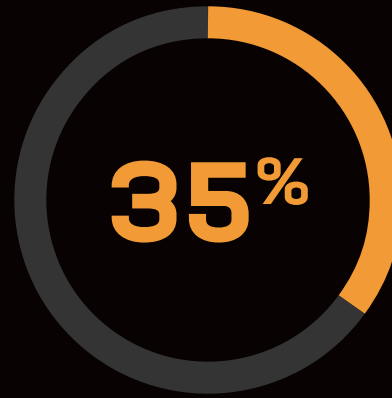
**Artificial Intelligence or Machine Learning**

**33%**

**Generative AI**

# Safely Modernize Public Sector Applications and Infrastructure with F5 and AWS

F5 offers application delivery, security, and networking across the entire hybrid cloud estate to provide reliable and secure apps and services on AWS or anywhere else you need them.  With F5 and AWS you can expect solutions that work together seamlessly to help you maintain a positive experience for citizens and employees.

**Ensure your clouds, apps, and services are always:**

**Secure**          **Available**          **Fast**

**The F5 and AWS Partnership:**

- 10+ years of collaboration

- Over 1,000 joint customers

- Competencies for containers, networking, and security

- Service validations for AWS WAF, Amazon CloudFront, AWS Outposts, and Linux

- Over 20 AWS certifications

[1]  EY, 2024 EY federal, state and local trends report, Feb 2024

[2]  NASCIO, The 2023 State CIO Survey, Oct 2023

[3]  EY, 2024 EY federal, state and local trends report, Feb 2024

[4]  NASCIO, 2024 State CIO Top 10 Priorities, Dec 2023

[5]  EY, 2024 EY federal, state and local trends report, Feb 2024

[6]  NASCIO, Capitals in the Cloud Part II: Changing the Cloud Conversation, Oct 2023

[7]  Cal Matters, 'Getting significantly worse': California community colleges are losing millions to financial aid fraud, Apr 2024

[8]  F5 Labs, 2023 DDoS Attack Trends, Feb 2023

[9]  F5 Public Sector Solutions

[10]  EY, 2024 EY federal, state and local trends report, Feb 2024

## ABOUT F5

### BRINGING A BETTER DIGITAL WORLD TO LIFE

F5 is a multicloud application services and security company committed to bringing a better digital world to life. F5 partners with the world's largest, most advanced organizations to secure and optimize apps and APIs anywhere—on premises, in the cloud, or at the edge. F5 enables organizations to provide exceptional, secure digital experiences for their customers and continuously stay ahead of threats. For more information, go to f5.com. (NASDAQ: FFIV).

Learn more about F5 solutions for AWS at **f5.com/aws**