AGILITY
2016
SOLUTIONS FOR AN APPLICATION WORLD
Best Practice Deployment of F5 App Services in Public Clouds

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Cloud Adoption Continues…

…across industries, geographies, and customer segments

66% say agility/speed is main driver for moving to private clouds¹

By 2019, 25–30% of Global 2000 enterprises will implement hybrid cloud, up from 10–15%²

20% of F5 customers plan to migrate up to 50% of their workloads to the cloud³

Moving 60% of its 9,000 apps to cloud

Deployed its most critical workloads, including new flagship mobile-banking app, to AWS

100% of web and mid-tier apps on OpenStack—time to market went from 8 weeks to 1 day

¹ Source: 2015 Gartner DC Conference Poll
² Source: 2015 Gartner Data Center Conference
³ Source: F5 2016 State of App Delivery customer survey
Deployment Mix Shifting Towards Public Clouds

**Deployments are typically hybrid**

- **Public Cloud**
  - Multiple tenants
  - Off-premise
  - Shifts CapEx to OpEx
  - Offers utility billing
  
  
- **Hybrid Cloud**
  - Bridges Private and Public
  - Allows manipulation of CapEx and OpEx
  
  
- **Private Cloud**
  - Single tenant
  - On or off-premise
  - Leverages existing CapEx

**But workloads are moving to public**

- **2015 Deployments**
  - 18% Public
  - 71% Hybrid
  - 6% Private

- **Projection of Cloud Workloads**
  - 2015 Cloud Index Report

  
  
- **Public**
  - 44% CAGR

- **Private**
  - 14% CAGR
The challenge with today’s cloud services

Lack of standardized app services with centralized control

Public cloud vendors offer services-centric model that delivers individual building blocks

Availability and security limited to the network or individual services

Inconsistent app security services and policies can introduce significant risk for vulnerabilities

You must combine components of the cloud platform to ensure app delivery meets user requirements
Your cloud strategy should be an extension of your data center strategy: app-centric

Enable both network and application security
Deliver application high availability; not just infrastructure availability
Ensure application performance
Centralize management and orchestration of the application
Streamline app delivery and security services across on-premises and cloud

Letting you focus on ensuring availability, security, and performance for each application
F5 Public Cloud Solutions and Use Cases

What's Available to Buy

<table>
<thead>
<tr>
<th>VE</th>
<th>VE</th>
<th>VE</th>
</tr>
</thead>
<tbody>
<tr>
<td>25M</td>
<td>200M</td>
<td>1G</td>
</tr>
<tr>
<td>Good</td>
<td>Better</td>
<td>Best</td>
</tr>
</tbody>
</table>

App Availabilty

App Performance

App-Centric Strategy

App Protection

App Access

Major Cloud Providers With F5

- BYOL and utility billing currently available
- BYOL billing currently available

Programmatic Tools

Professional Services

Business Models

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Application Availability
Extend availability your users expect to cloud-based apps

Challenges
• Application uptime and resiliency
• Lack of application control and flexibility
• Disaster recovery

Recommended app delivery services
• Local + global traffic management, DNS
• SSL offload and intercept
• App templates to deliver consistent powerful application policies (ex. URI routing/WAF/etc.)

Key Benefits
• Deliver customer SLAs
• Monitor + dynamically respond to issues
• Business continuity
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Cloud Traffic Optimization Solution with Context-Aware Programmability

Solution Background and Needs

- Increasing connection handling capacity — caused by long live connections on push applications
- Needs to optimize/reduce compute instances on AWS

Key Benefits

- Reduce OpEx and compute instances on cloud — by 88%
App Performance
Extend performance to cloud-based apps

Challenges
- Lack of application control and flexibility
- Disaster recovery
- Slow performing apps and latency

Recommended app delivery services
- Local + global traffic management, DNS
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- HTTP2, TCP, and network optimization

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- Achieve user performance expectations
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• Monitor + dynamically respond to issues
• Business continuity
• **Achieve user performance expectations**

Best Practice: Apply Dynamic Autoscale
Access Control
Ensure granular control in the cloud

A Japanese utility outsourced their software developments to 3rd party and implements highly secured access control management

Solution Background & Needs
• Support SAML cloud federation – O365
• Cloud based access control -performance
• Simplify security management for 3rd party access – Secured SSL VPN

Key Benefits
• Improved performance, skills retention, APM’s stringent endpoint checking control
• Eased operations for policy management
• Single sign-on and federated access for future SAML integration
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Financial services company has adopted the Cloud First strategy. They plan to migrate about 2000 applications to AWS by end of 2016.

**Solution Background & Needs**
- Seamless Migration – existing F5 WAF user
- Simplified and consolidated security management

**Key Benefits**
- Robust application and data protection
- Customized shell scripts to address cross region availability issues
- Skills Retention – seamless migration
- Single platform – simplified, scalable, cost effective
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F5 Turnkey WAF Solution for Azure Security Center

- **Simple deployment experience** integrated with Azure workflow and services
- **Out-of-the-box choice of security settings** preconfigured by F5 experts
- **Comprehensive application security and compliance** with advanced L7 protections
- **Choice of pay-as-you go and BYOL** to best fit business scenario
- **Integration with Azure dashboard** and alert/visualization services
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Best Practice: Web App with Port 80 and/or 443
Automation/Orchestration Best Practices

*Deploy using Templates*

Common interface among clouds!

AWS = Cloudformation Templates
https://github.com/f5networks/f5-aws-cloudformation

Azure = Azure Resource Templates
https://github.com/f5networks/f5-azure-arm-templates

Openstack = Heat Templates
https://github.com/f5networks/f5-openstack-heat

https://cloudinit.readthedocs.io/en/latest/
Automation/Orchestration Best Practices

Cloud-Init – What is it?

Allows for boot time customization of images

Retrieves user data from an external source and performs actions

Will be enabled by default in all BIG-IP VE instances except for Azure
Can be disabled after first boot

Use Cases:

• Configures Hostname, Network and Security Information
• Dynamically discover environment/deployment specific information
• (ex. Deployment Names, Autoscale Group Names, S3 Buckets, etc. from items just created)
SDKs (uses Big-IP’s iControl REST API):
https://github.com/f5networks/f5-common-python

Ansible Libraries (facilitates common tasks)
https://github.com/F5Networks/f5-ansible

https://cloudinit.readthedocs.io/en/latest/
DEMO – F5 in Azure Security Center
### Recommendations

<table>
<thead>
<tr>
<th>Description</th>
<th>2 web applications</th>
<th>State</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add a web application firewall</td>
<td>Open</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Finalize web application firewall setup</td>
<td>Open</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Apply disk encryption</td>
<td>Open</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

**Add a Web Application Firewall**

Select an existing solution or create a new one.

- **Create New**

- **Use existing solution**
  - F5 Networks demoapp01-waf

**WEB APPLICATION**

<table>
<thead>
<tr>
<th>WEB APPLICATION</th>
<th>STATE</th>
<th>SEVERITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>demoapp03</td>
<td>Open</td>
<td>High</td>
</tr>
<tr>
<td>testbip-ubuntu-01</td>
<td>Open</td>
<td>High</td>
</tr>
</tbody>
</table>
F5 WAF Solution

Bring Your Own License enabled.

Turn-Key WAF Solution for Microsoft Azure Enable compliance and better protect your applications with the F5 web application firewall (WAF) solution:

- Simple deployment experience integrated with Azure workflow and services
- Out-of-the-box protection from common application vulnerabilities
- Consistent policy management and user experience across Cloud and Datacenter apps

The F5 WAF solution is powered by the industry-leading F5 BIG-IP Application Security Manager and BIG-IP Local Traffic Manager technologies and provides:

- Three security settings preconfigured by F5 experts
- Out-of-the-box defense against OWASP Top 10 threats and layer 7 DDoS attacks
- Compliance with PCI-DSS requirements and ICSA Labs certification
- Automated security policy hardening with built-in Rapid Policy Builder
- Ability to customize the configurations after original deployment

Where to learn more: F5 WAF for Azure Security Center solution profile

For a free trial: F5 WAF For Azure Security Center Free Trial

To buy: How to Buy

F5 Networks

F5 Support Detail
F5 BIG-IP Local Traffic Manager
F5 BIG-IP Application Security Manager
F5 BIG-IP Licensing Information
F5 WAF User's Guide

New Web Application Setup

VM Configuration

- Number of machines to deploy
  - Value: 2
- Host
  - Value: demoapp03-waf
- Password
  - Value: **************
- Pricing tier
  - Value: Standard_A4
- Resource group
  - Value: demoapp03-asc9444
- Location
  - Value: West US
- Subscription
  - Value: c0e48919-cf57-4472-a3ed-f6bc7c...

Create

Please note, this process may take about 30 minutes. After its completion, follow the new task “Finalize Web-Application Firewall setup” to complete the process.
DEMO – Getting Started in AWS Using Automation
Demo Full Stack Deployment using Cloudformation Templates
https://github.com/F5Networks/f5-aws-cloudformation

- Deploy a full reference stack, complete with
  - VPC
  - Subnets
  - Route Tables
  - Security Groups
  - Web Server
  - Big-IP

- The Big-IP instance
  - BYOL or Utility
  - Single-Nic
  - Has simple URI-Routing Policy

- Full stack ideal for Dev/Test/POCs to provide reference

**NOTE:** Contains many templates for different deployment needs (ex. Big-IP only for deploying into “Existing” Environments)
DEMO – Dynamic Auto Scaling in AWS
- Auto scale VEs with AWS Auto Scale Service
- BYOL w/ Utility BIG-IP VEs to meet throughput demand
- ELB distributes traffic to BIG-IP VEs
- Connected to all pool members via routed topology
- Provision BIG-IP VEs and app AZs to meet availability SLAs
# Multiple Licensing Models to Meet Customer Needs

<table>
<thead>
<tr>
<th>Marketplace Utility License</th>
<th>Bring Your Own License (BYOL)</th>
<th>Volume Licensing Subscription (VLS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• On-demand utility pricing</td>
<td>• Version Plus license (Individual and License Pools)</td>
<td>• Subscription discounts for 100+ applications</td>
</tr>
<tr>
<td>• Highest flexibility</td>
<td>• Customer owned</td>
<td>• 1- or 3-year terms</td>
</tr>
<tr>
<td>• Pay-as-you-go or annual subscription</td>
<td>• Can move across private and public clouds</td>
<td>• Includes premium support</td>
</tr>
<tr>
<td>• Public cloud</td>
<td>• Public, private, and hybrid cloud</td>
<td>• Public, private, and hybrid cloud</td>
</tr>
<tr>
<td>• Best for deployment flexibility, on-demand consumption</td>
<td>• Best for few production workloads or existing licenses</td>
<td>• Best for large scale workload production, F5 for every app</td>
</tr>
<tr>
<td>• OpEx</td>
<td>• CapEx</td>
<td>• OpEx</td>
</tr>
</tbody>
</table>

| via F5 Ready Cloud Provider | via F5 or Channel Partner | Volume of F5-backed apps | Price/License |

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On-Demand License Pool Spin-Up

Best price per instance VE License Pools are available for high-density and multi-tenant virtual deployments

Use Case
• Spin-up a VE whenever it’s needed
• Reuse license on-demand
• Available for 4-pack and 25-pack VE license pools with BIG-IQ License Mgr
Wrap Up
How to Get Started

Get an Evaluation License
30-day virtual edition evaluation licenses of full-featured BIG-IP modules. Available as BYOL.

Buy BIG-IP Lab
For a nominal fee, build, test, configure, and stage full-featured, up-to-date BIG-IP modules in your lab (no time limits). Available as BYOL. f5.com/trial

Try in AWS
30-day free trial in AWS Marketplace or test drive with Microsoft apps.
Give Feedback – Get Points!

• Add class to your personal schedule.
• Survey will pop up in Mobile App.
• Answer the multiple choice.
• Submit your question to complete.
• Receive 5 points!
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