AGILITY

2016

SOLUTIONS FOR AN APPLICATION WORLD

Best Practice Deployment of F5 App Services in Public Clouds

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Alex Applebaum, Sr PME

Cloud Adoption Continues…

…across industries, geographies, and customer segments

66% say agility/speed is main driver for moving to private clouds[1]

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 cloud[3]

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

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Deployment Mix Shifting Towards Public Clouds

DEPLOYMENTS ARE TYPICALLY HYBRID

2015 DEPLOYMENTS

PUBLIC CLOUD
- Multiple tenants
- Off-premise
- Shifts CapEx to OpEx
- Offers utility billing

18%

HYBRID CLOUD
- Bridges Private and Public
- Allows manipulation of CapEx and OpEx

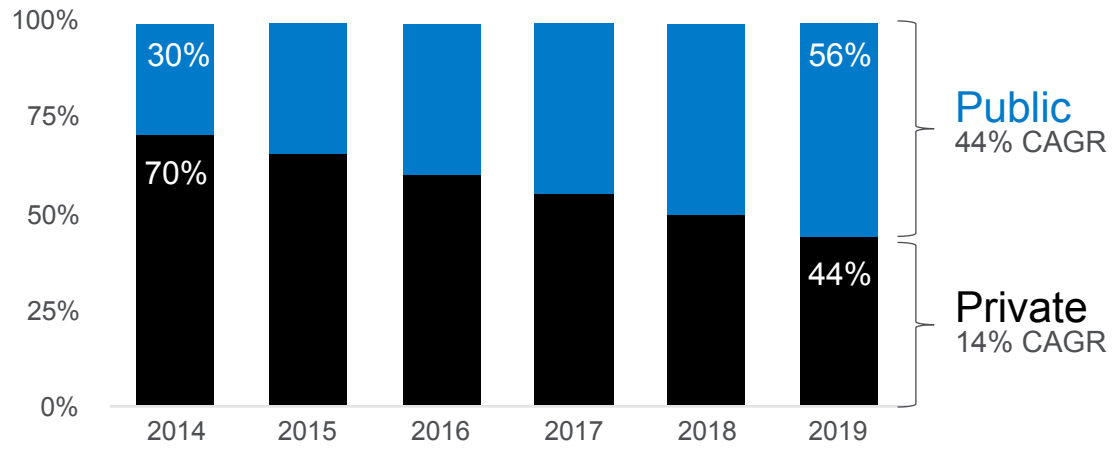
71%

PRIVATE CLOUD
- Single tenant
- On or off-premise
- Leverages existing CapEx

6%

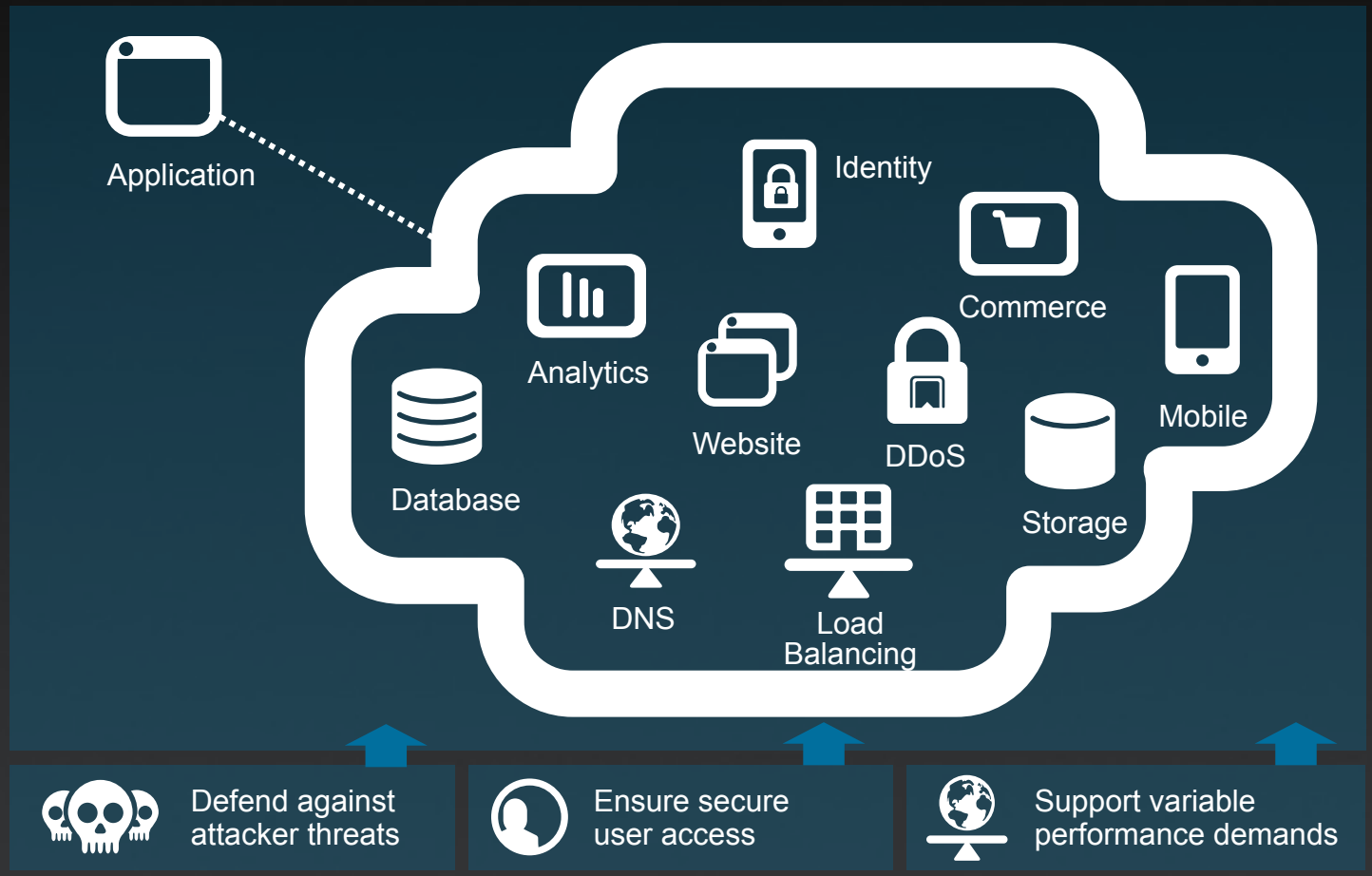
BUT WORKLOADS ARE MOVING TO PUBLIC

PROJECTION OF CLOUD WORKLOADS
2015 CLOUD INDEX REPORT



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

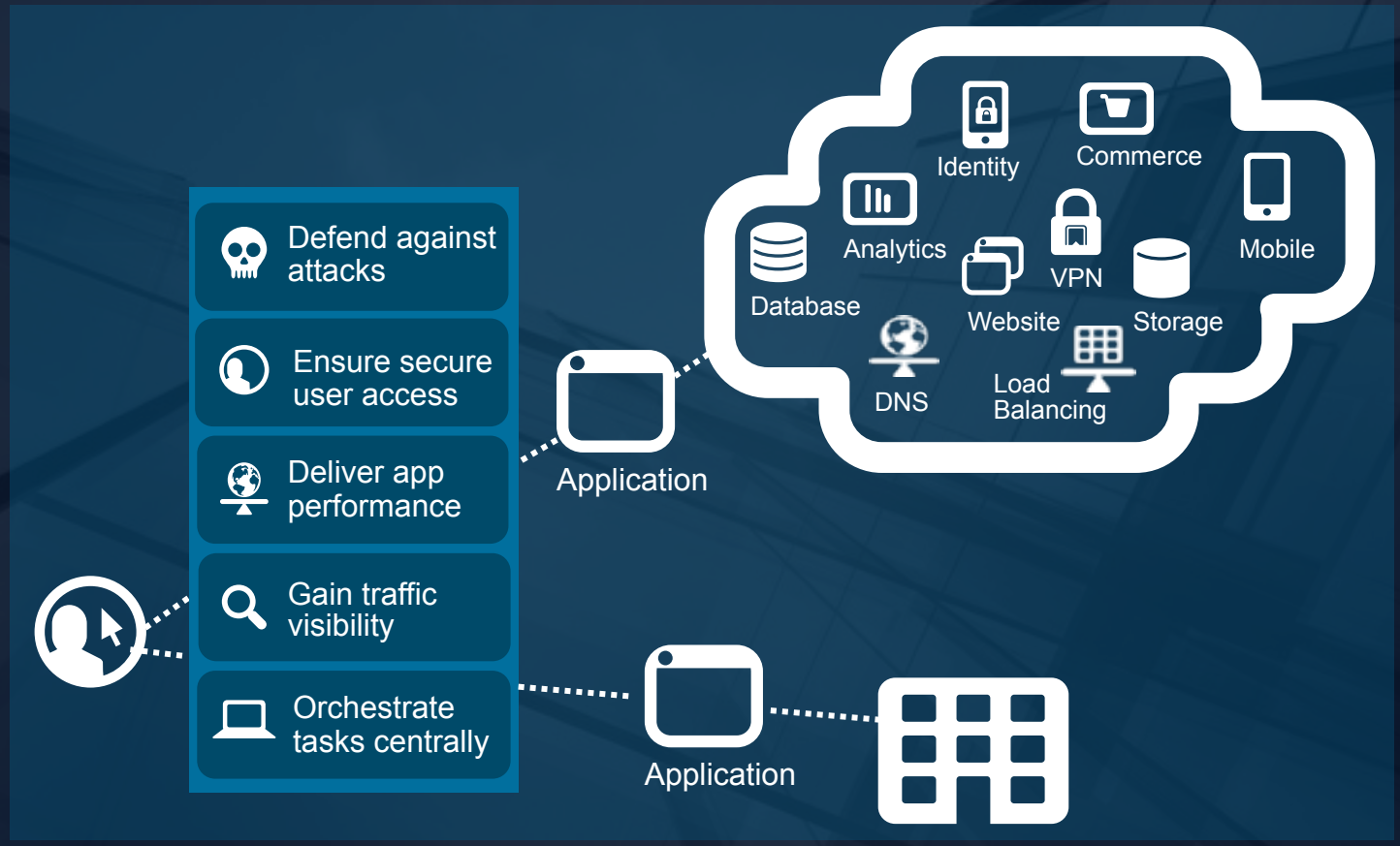


You must combine components of the cloud platform to ensure app delivery meets user requirements

© F5 Networks, Inc

Your cloud strategy should be an extension of your data center strategy: app-centric

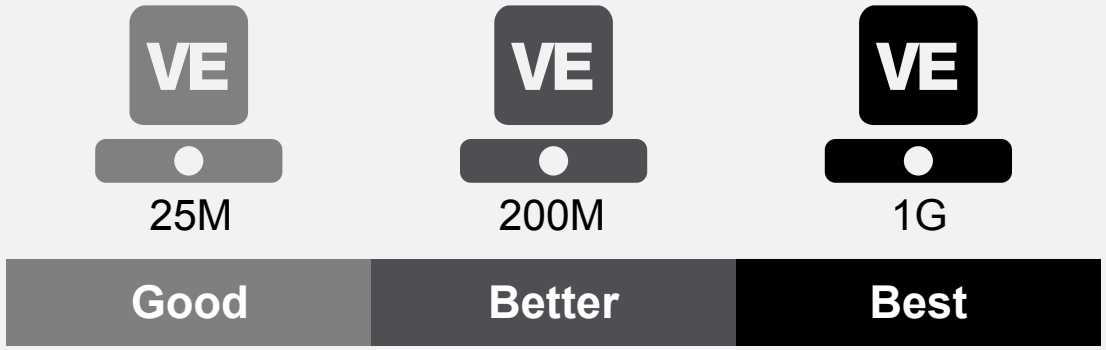
- Enable both network and application security
- Deliver application high availability; not just infrastructure availability
- Ensure application performance
- Centralize management and orchestration of the application
- Streamline app delivery and security services across on-premises and cloud



Letting you focus on ensuring availability, security, and performance for each application

F5 Public Cloud Solutions and Use Cases

What's Available to Buy



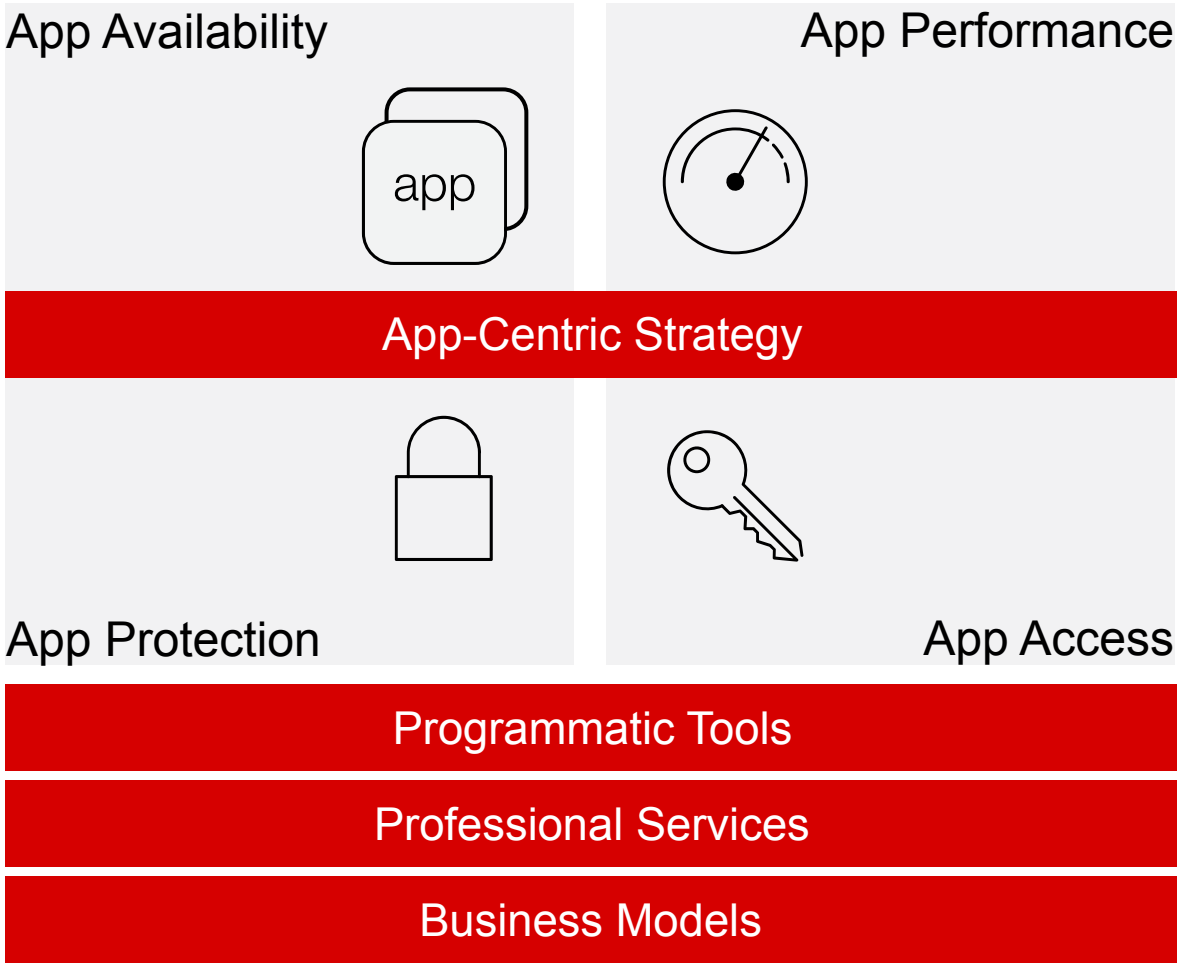
Major Cloud Providers With F5

amazon web services™

BYOL and utility billing currently available

Microsoft Azure

BYOL billing currently available



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Application Availability

Extend availability your users expect to cloud-based apps

Challenges

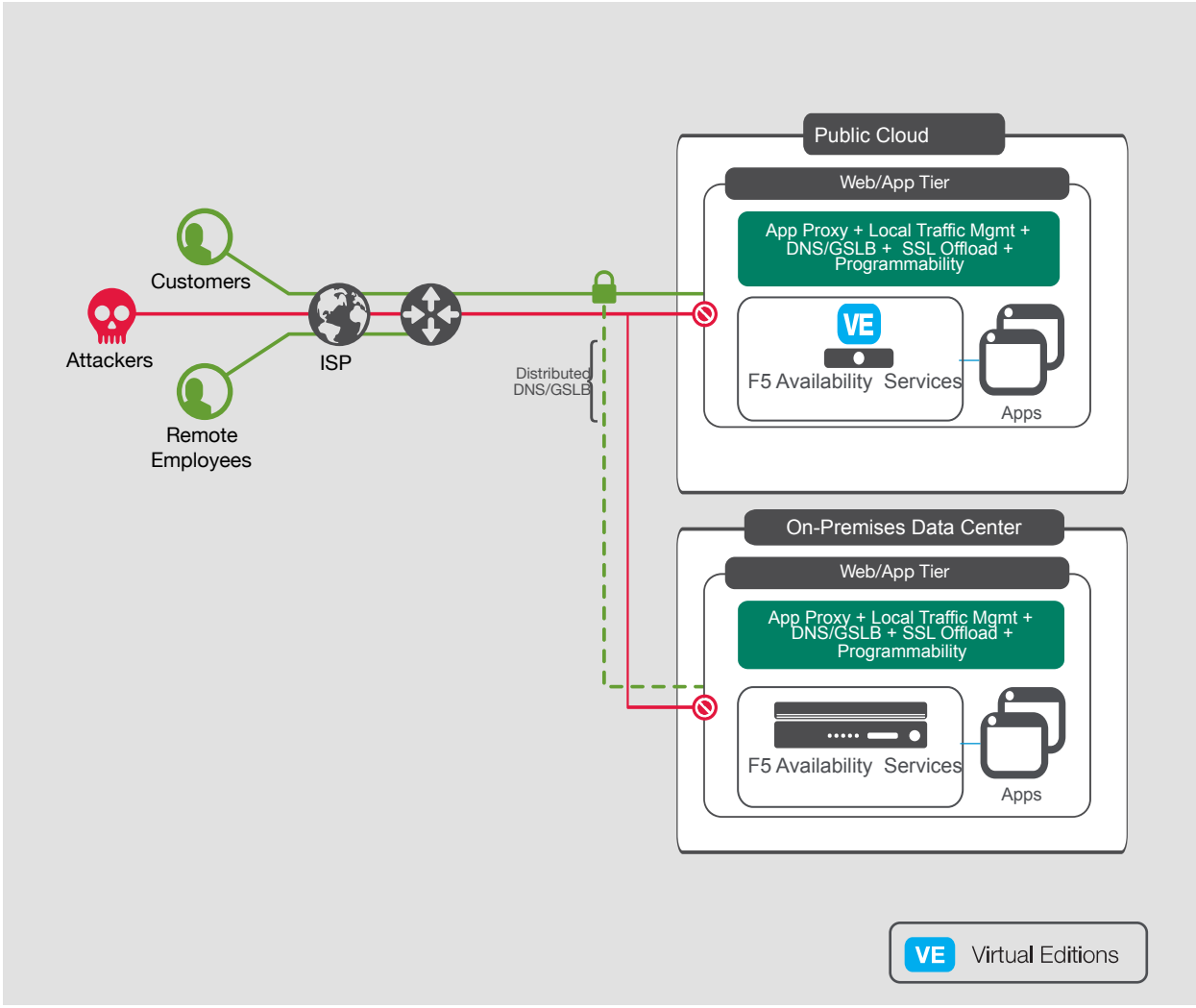
- Application uptime and resiliency
- Lack of application control and flexibility
- Disaster recovery

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



Application Availability

Extend availability your users expect to cloud-based apps

Best Practice:
Leverage Scale Out, GSLB and Failover Across AZs

Challenges

- Application uptime and resiliency
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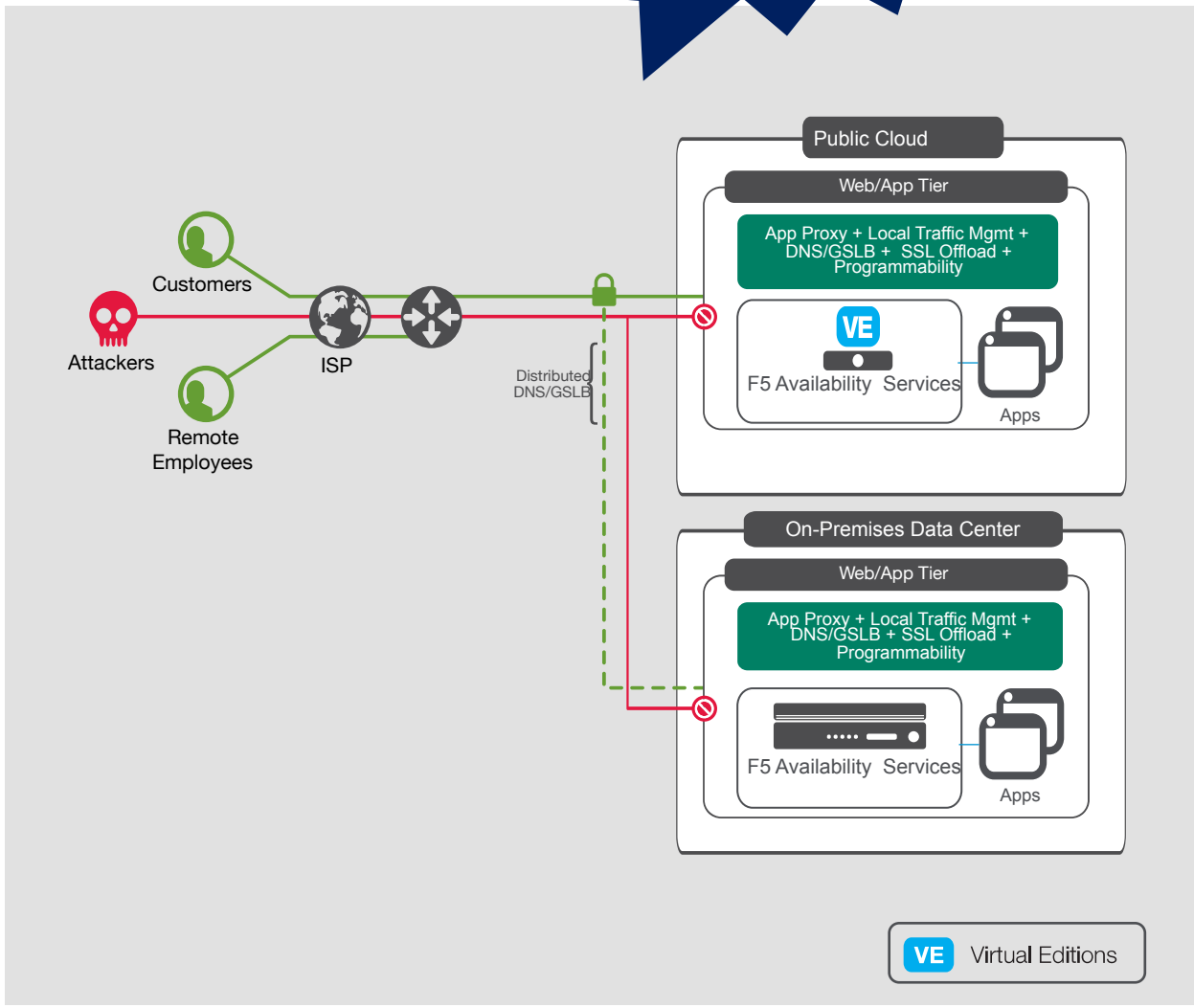


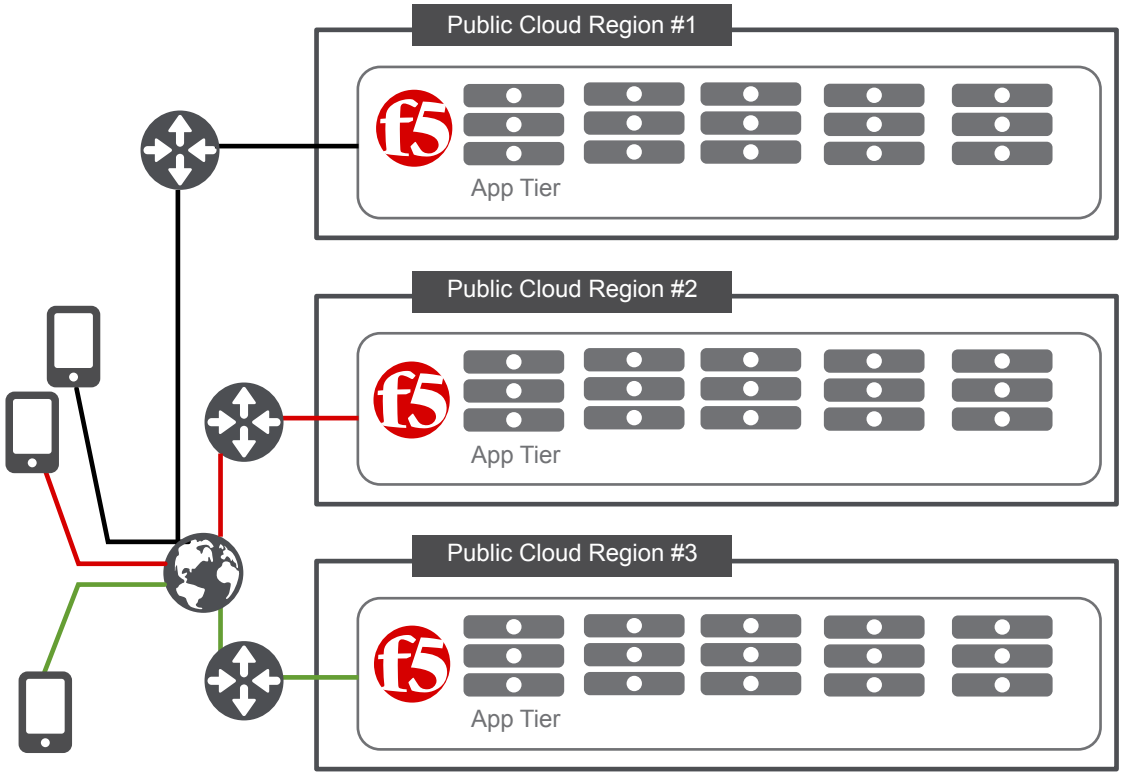
Cloud Traffic Optimization Solution with Context-Aware Programmability

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%



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App Performance

Extend performance to cloud-based apps

Challenges

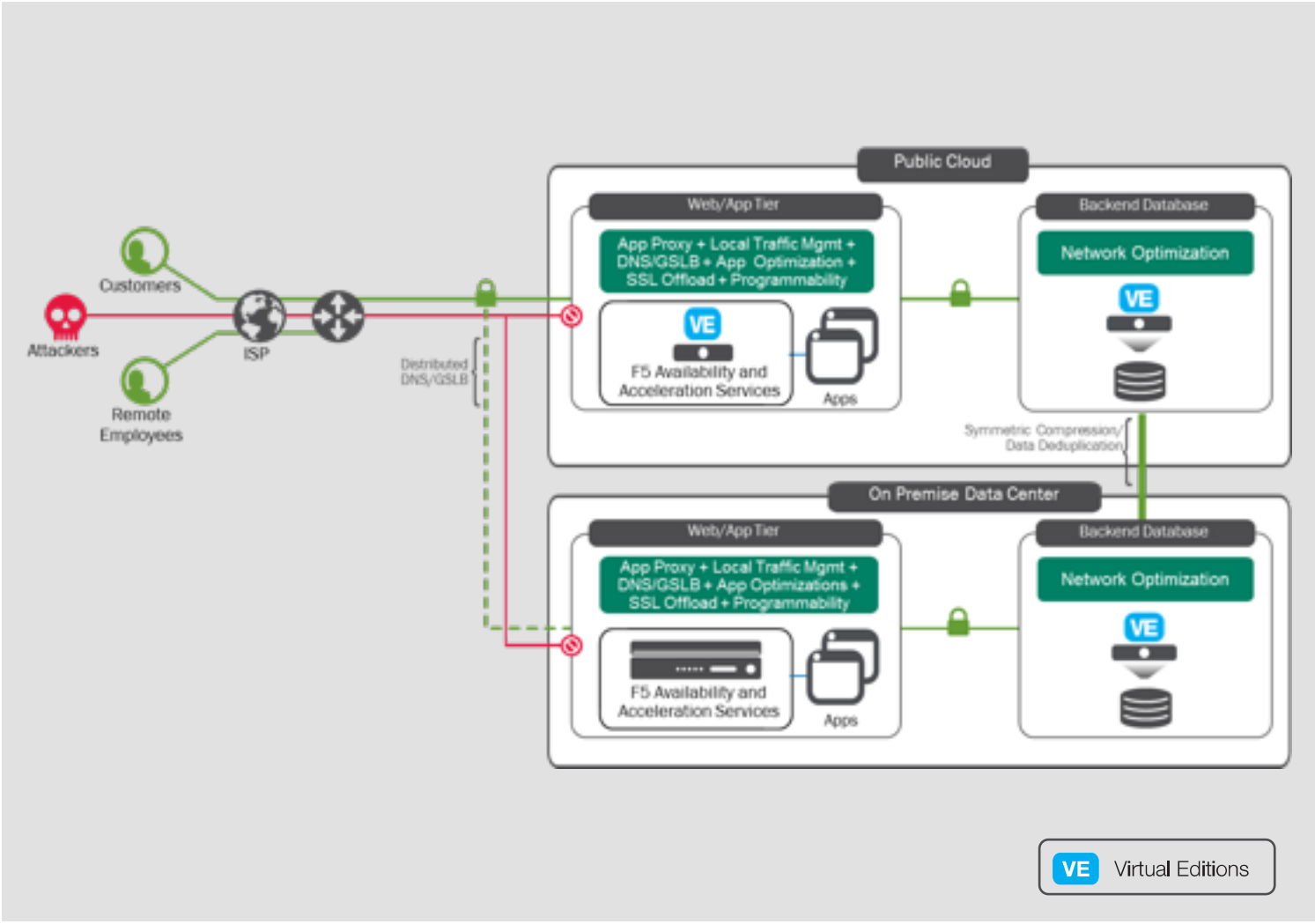
- Lack of application control and flexibility
- Disaster recovery
- **Slow performing apps and latency**

Recommended app delivery services

- Local + global traffic management, DNS
- SSL offload and intercept
- App templates to deliver consistent powerful application policies (ex. URI routing/WAF/ etc.)
- **HTTP2, TCP, and network optimization**

Key Benefits

- Deliver customer SLAs
- Monitor + dynamically respond to issues
- Business continuity
- **Achieve user performance expectations**



App Performance

Extend performance to cloud-based apps

Best Practice:
Apply Dynamic Autoscale

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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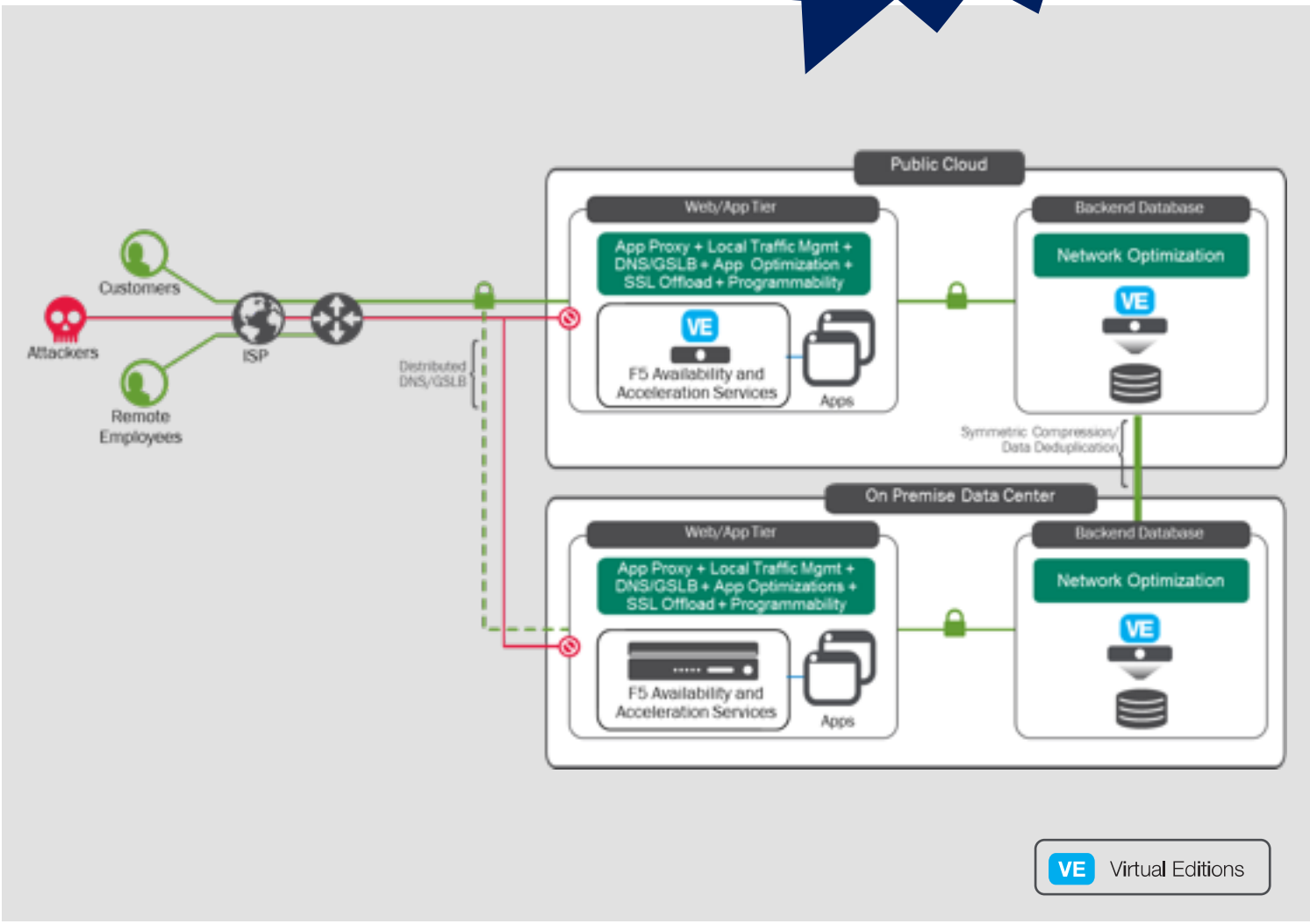


Access Control

Ensure granular control in the cloud

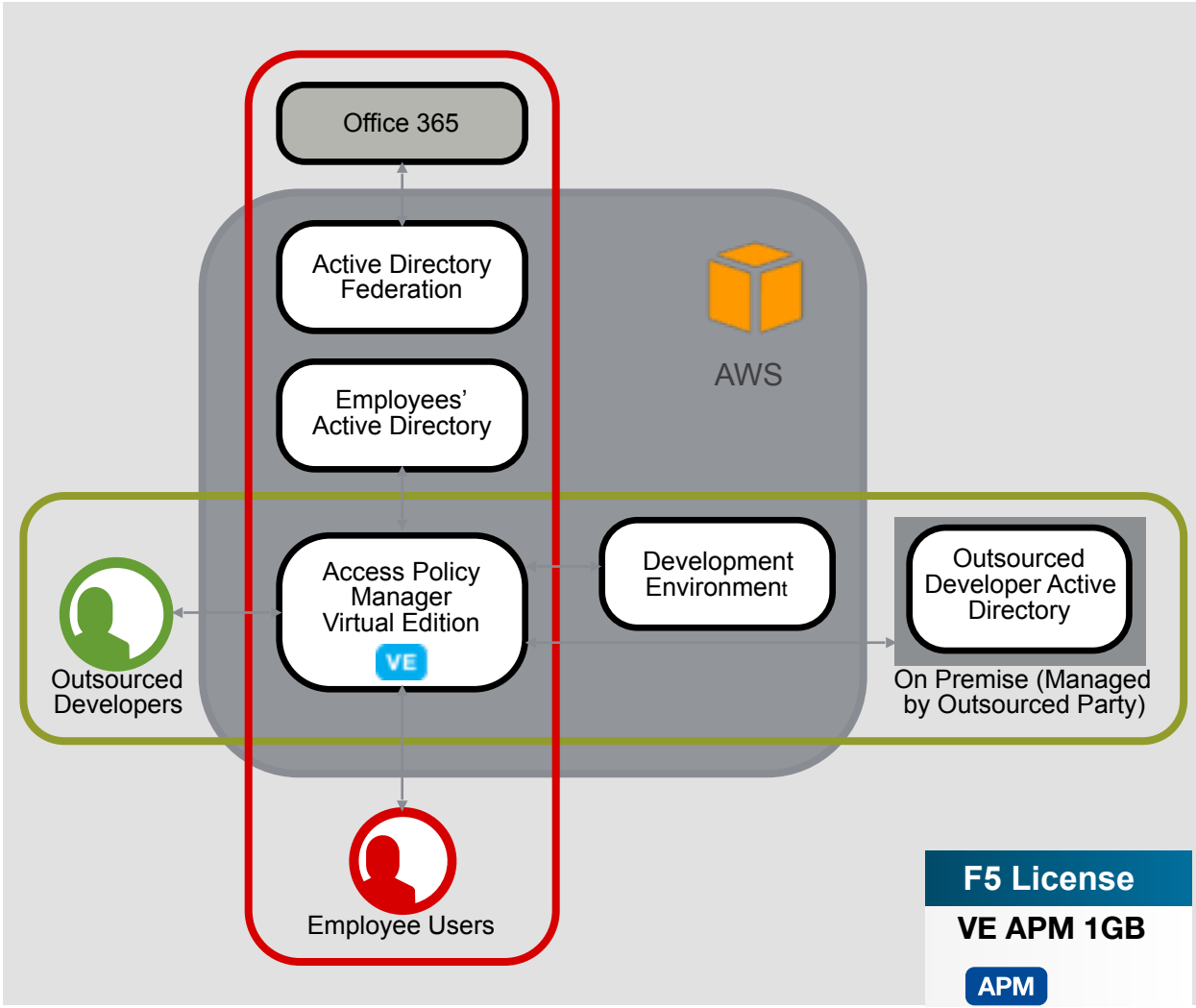
A Japanese utility outsourced their software developments to 3rd party and implements highly secured access control management

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



Access Control

Ensure granular control in the cloud

Best Practice: Federate Your Cloud-Based Apps

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

Solution Background & Needs

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- Cloud based access control -performance
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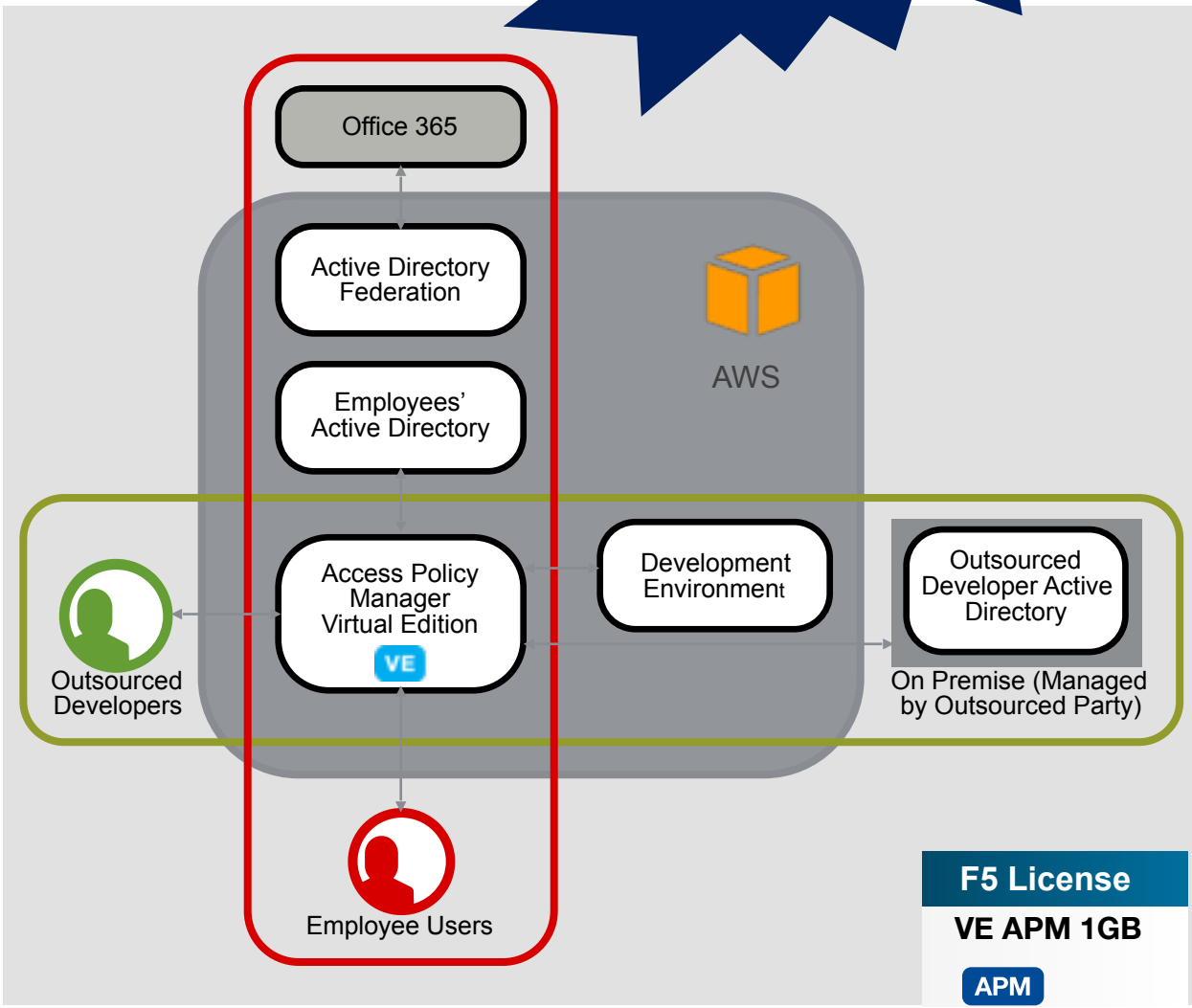


Application Security on AWS

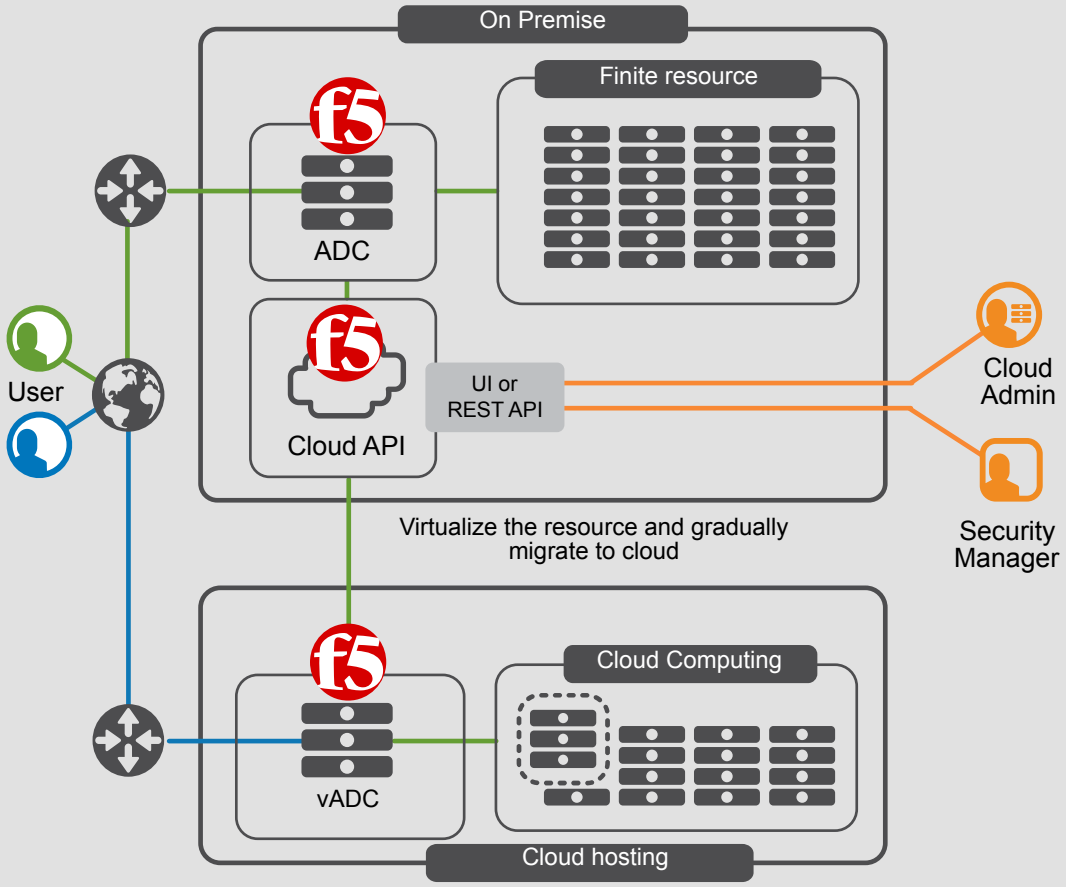
Financial services company has adopted the Cloud First strategy. They plan to migrate about 2000 applications to AWS by end of 2016.

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



Application Security on AWS

Financial services company has adopted the Cloud First strategy. They plan to migrate about 2000 applications to AWS by end of 2016.

Best Practice: Secure ALL Apps, Not just Tier 1

Solution Background & Needs

- Seamless Migration – existing F5 WAF user
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Key Benefits

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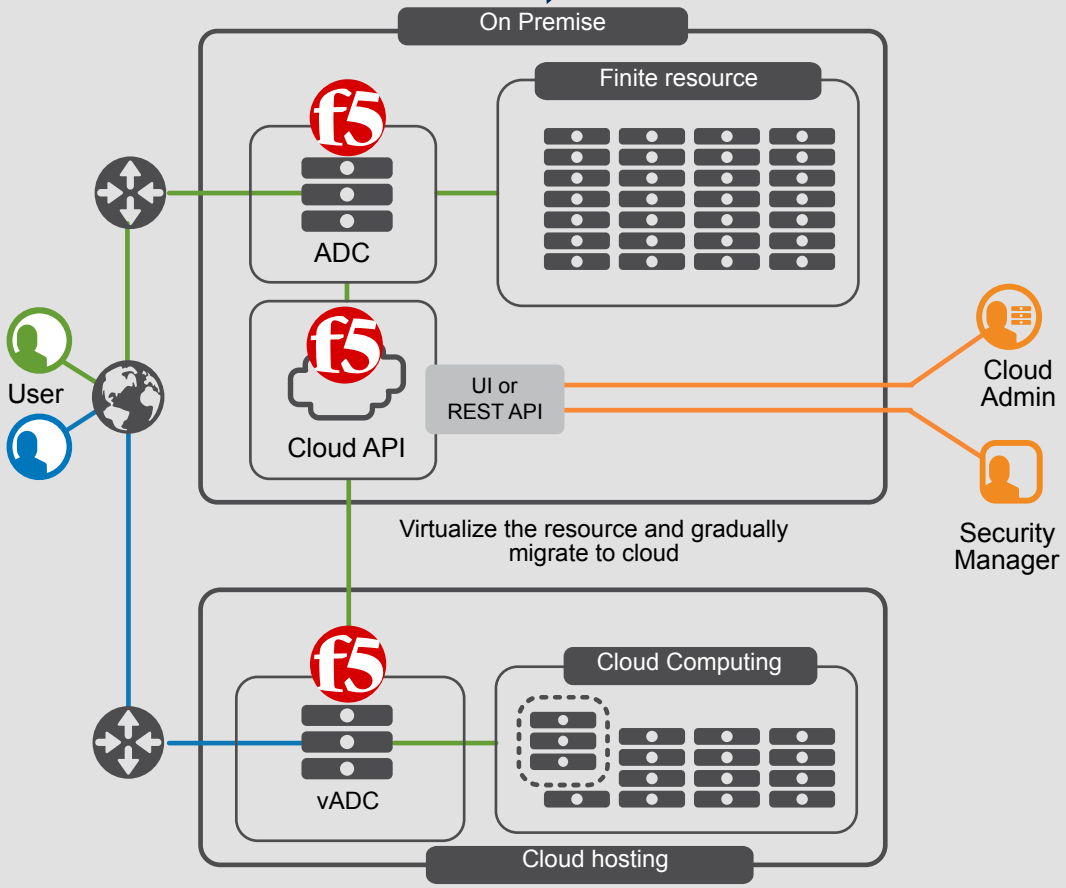
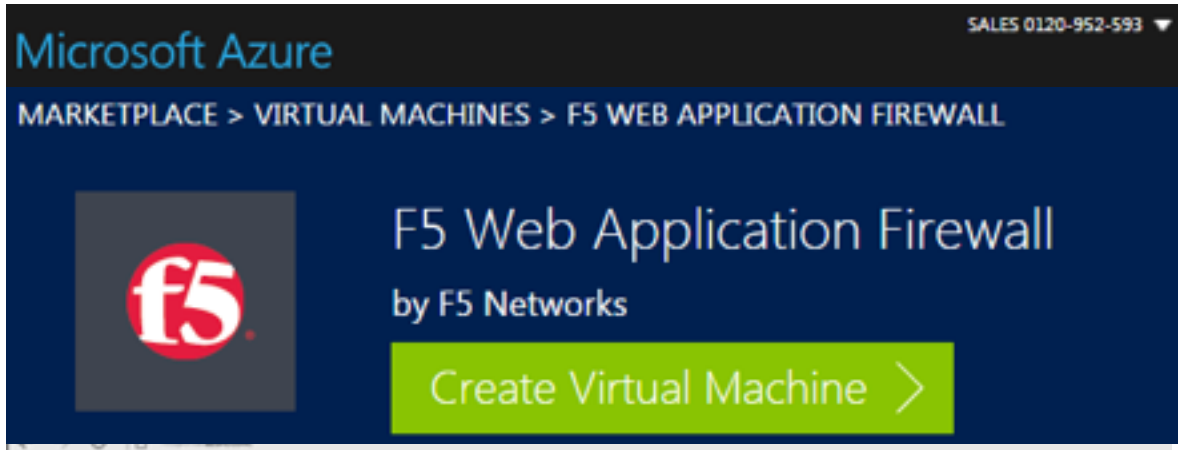
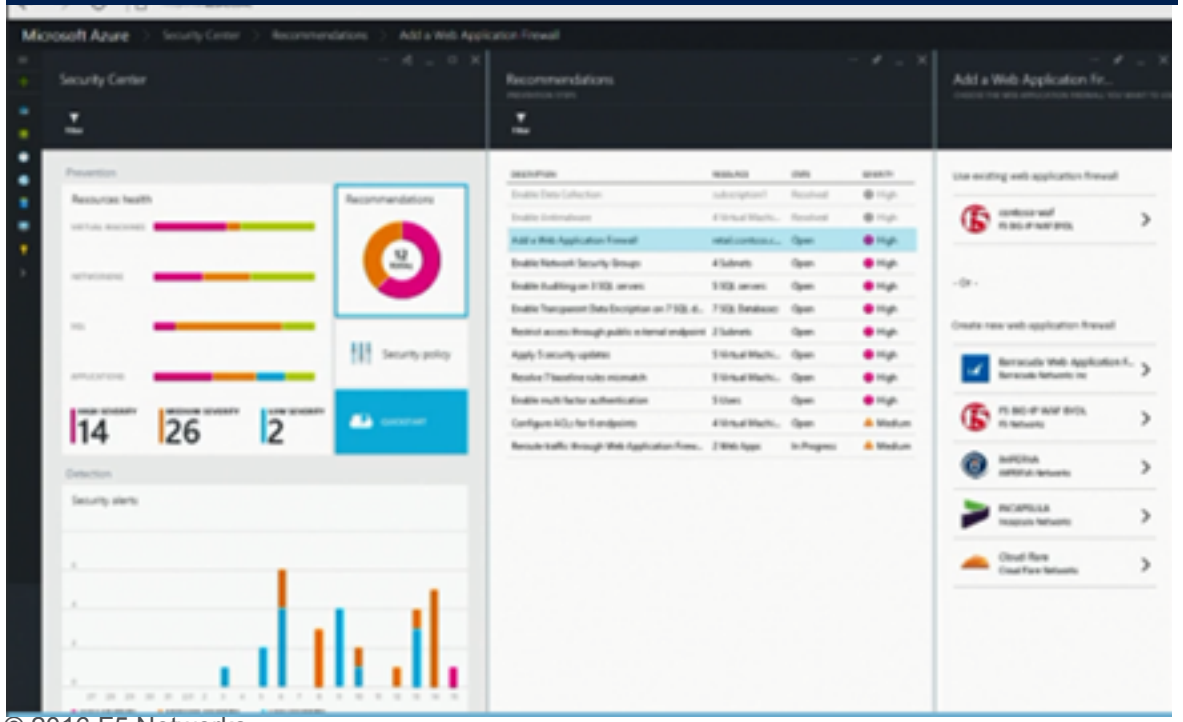


F5 Turnkey WAF Solution for Azure Security Center





- **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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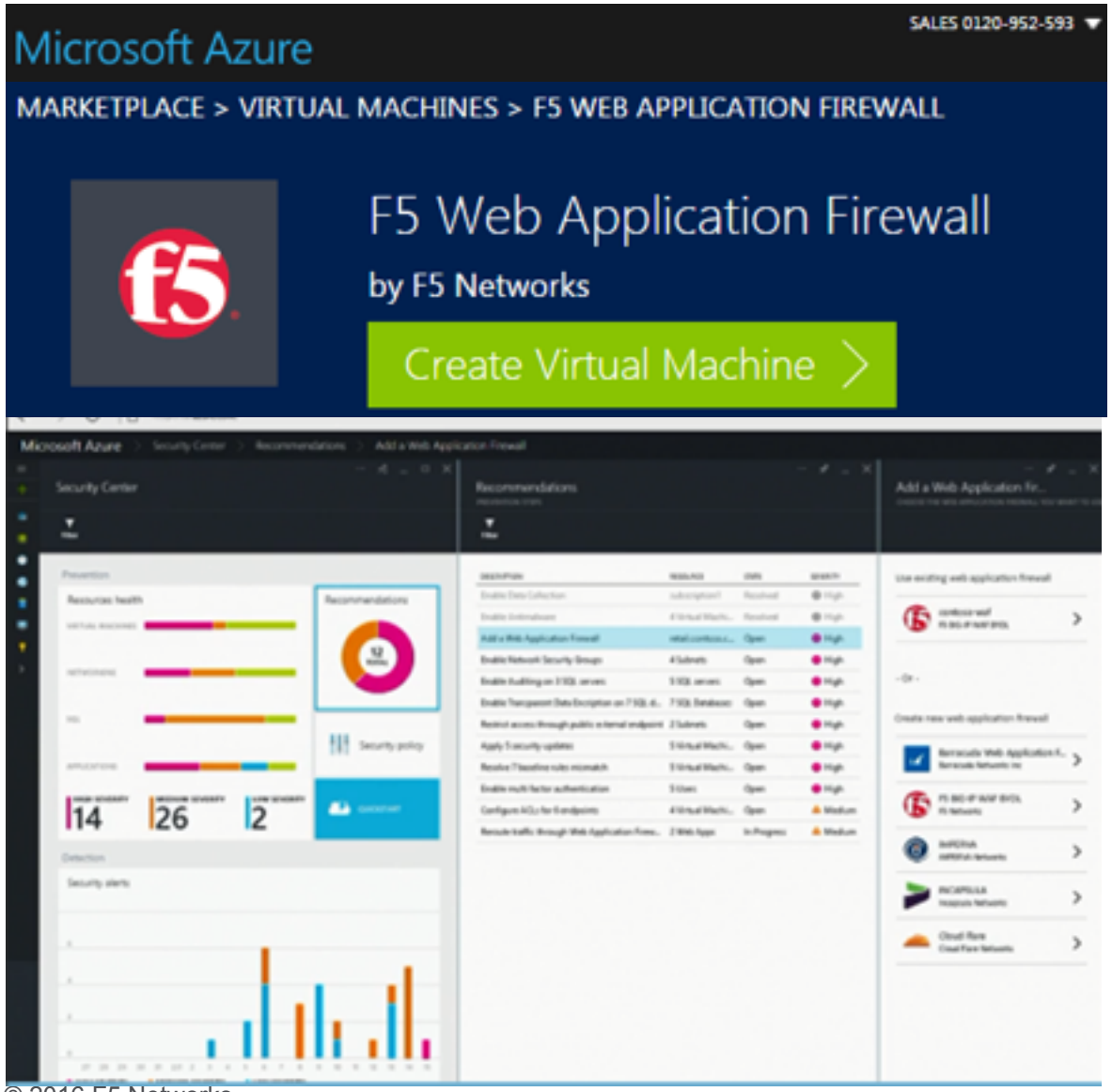

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Best Practice:
Web App with
Port 80 and/or 443

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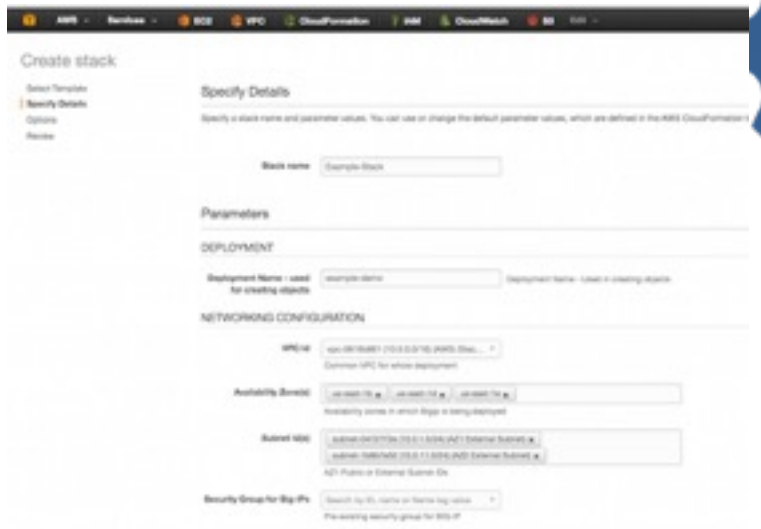
Automation/Orchestration Best Practices

***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)

https://cloudinit.readthedocs.io/en/latest/

Automation/Orchestration Best Practices

***Manage** Operational Lifecycle*

SDKs (uses Big-IP's iControl REST API):

https://github.com/f5networks/f5-common-python

Ansible Libraries (facilitates common tasks)

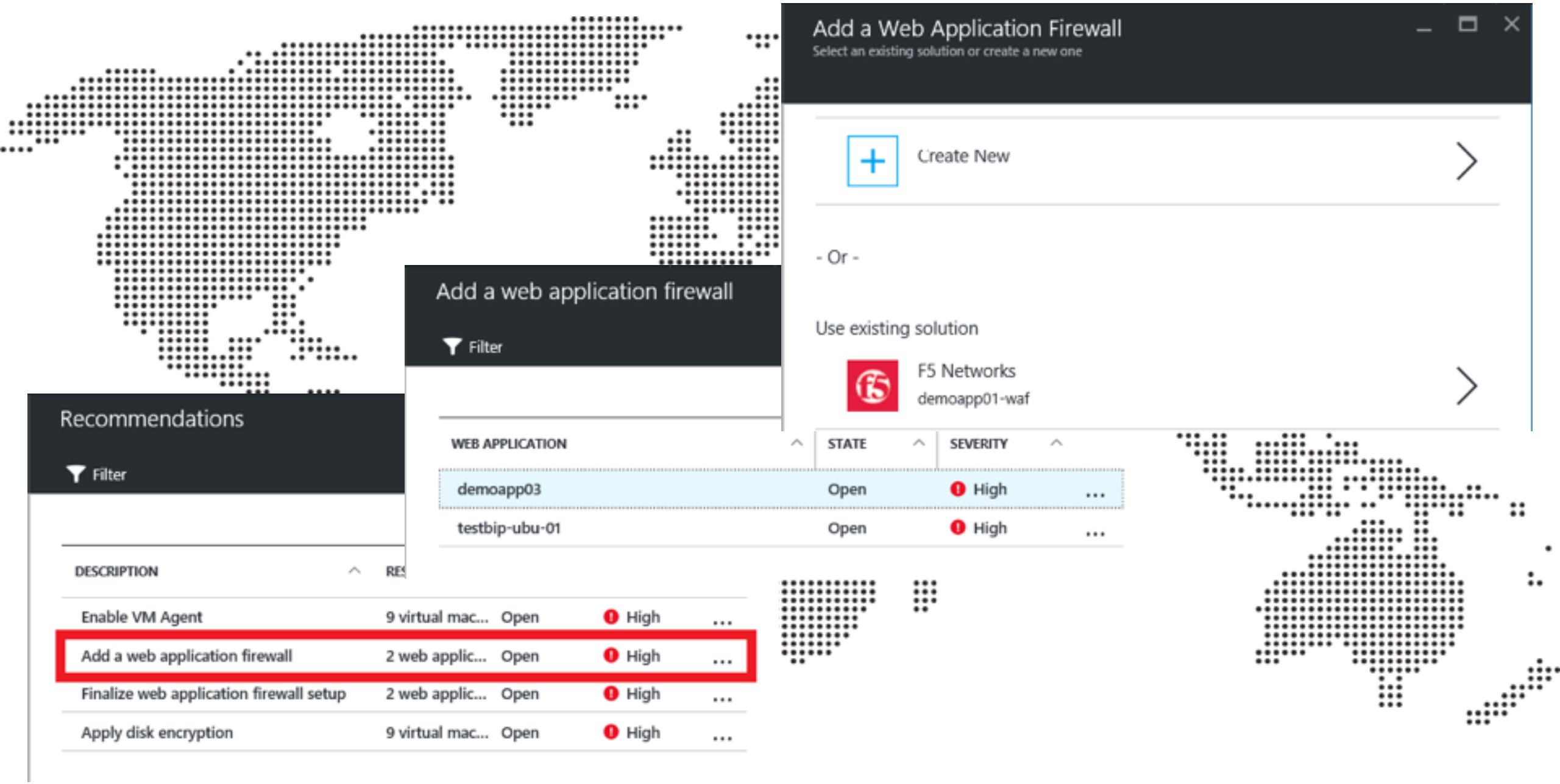
https://github.com/F5Networks/f5-ansible

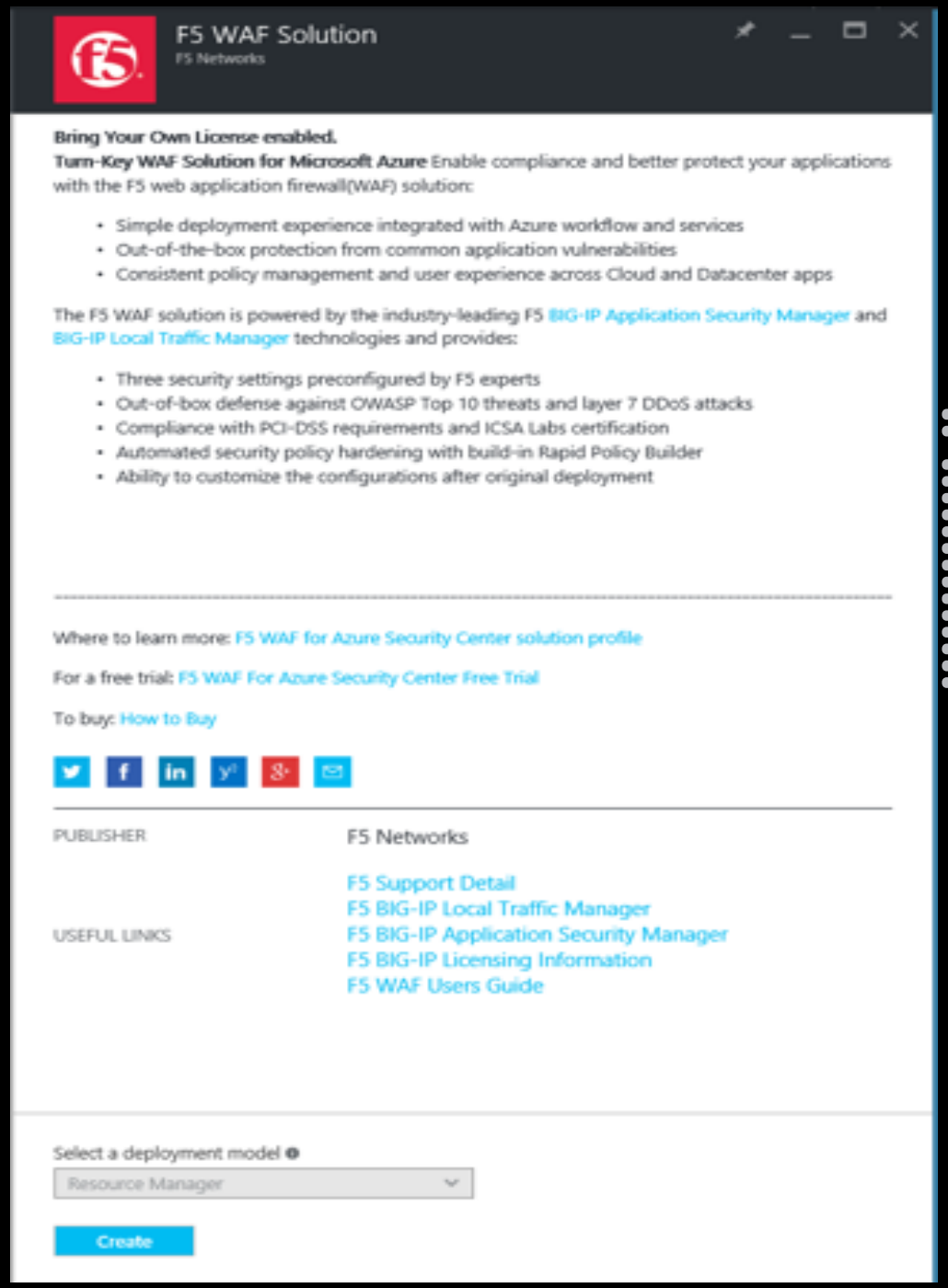
ANSIBLE

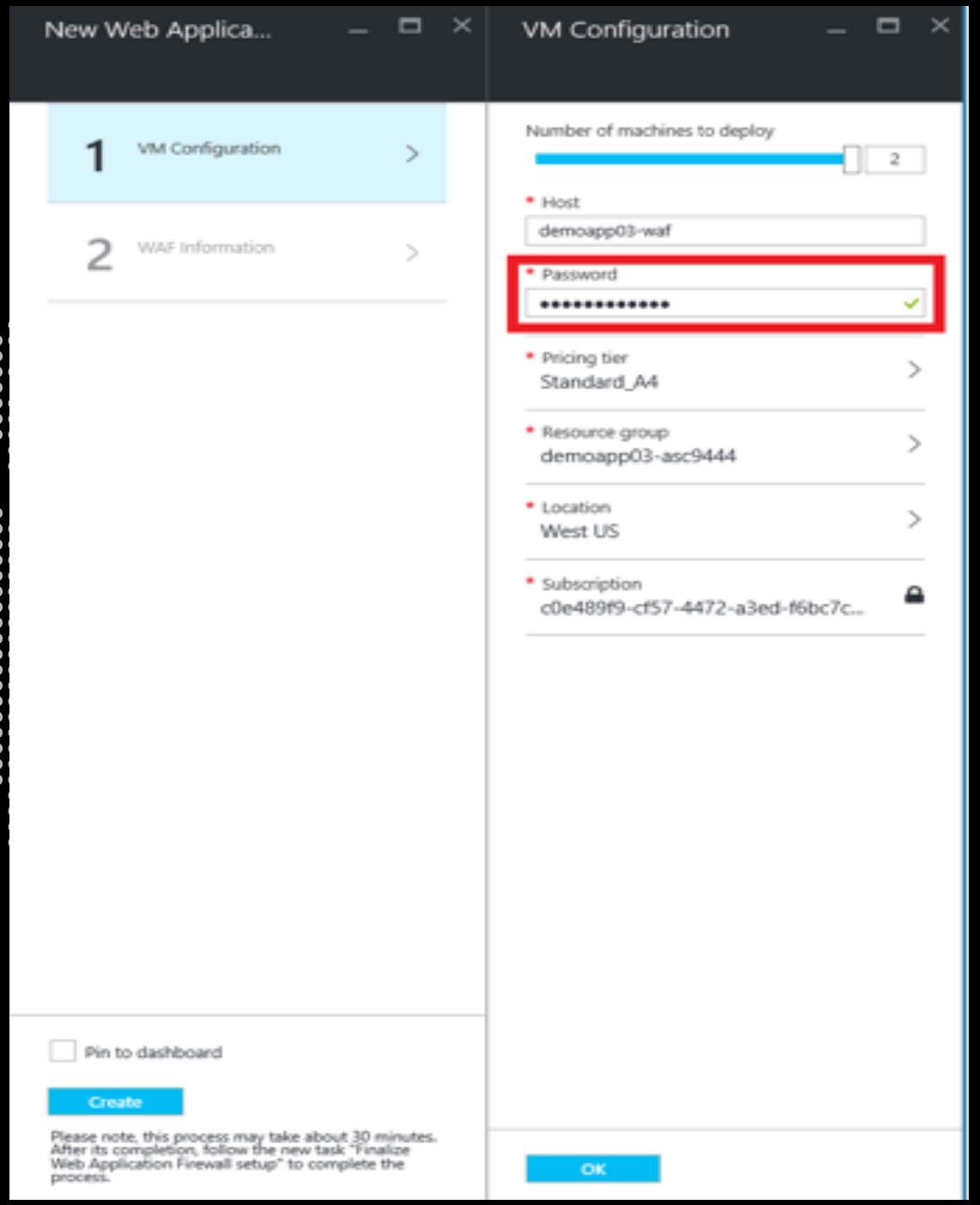
https://cloudinit.readthedocs.io/en/latest/

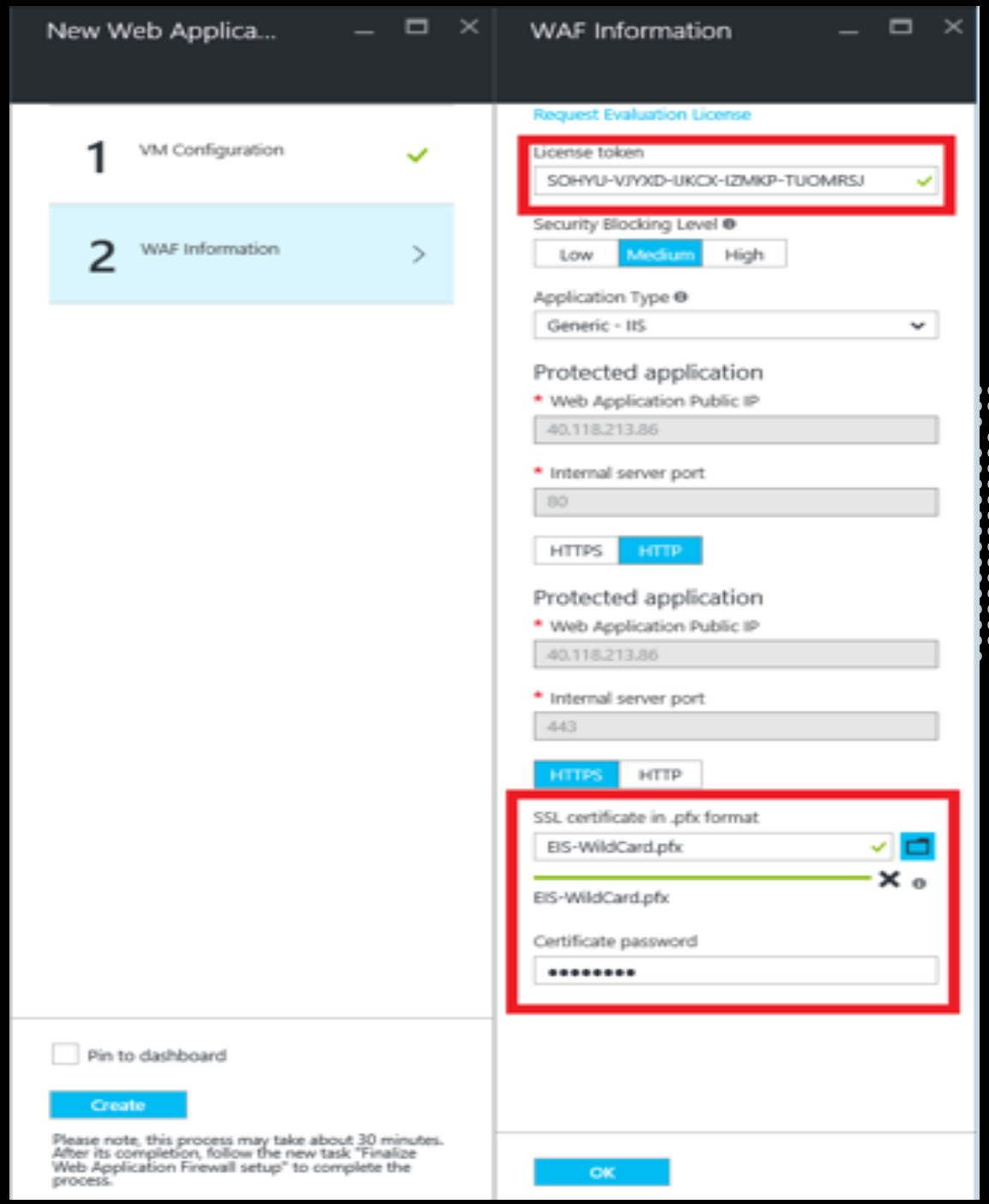
DEMO – F5 in Azure Security Center

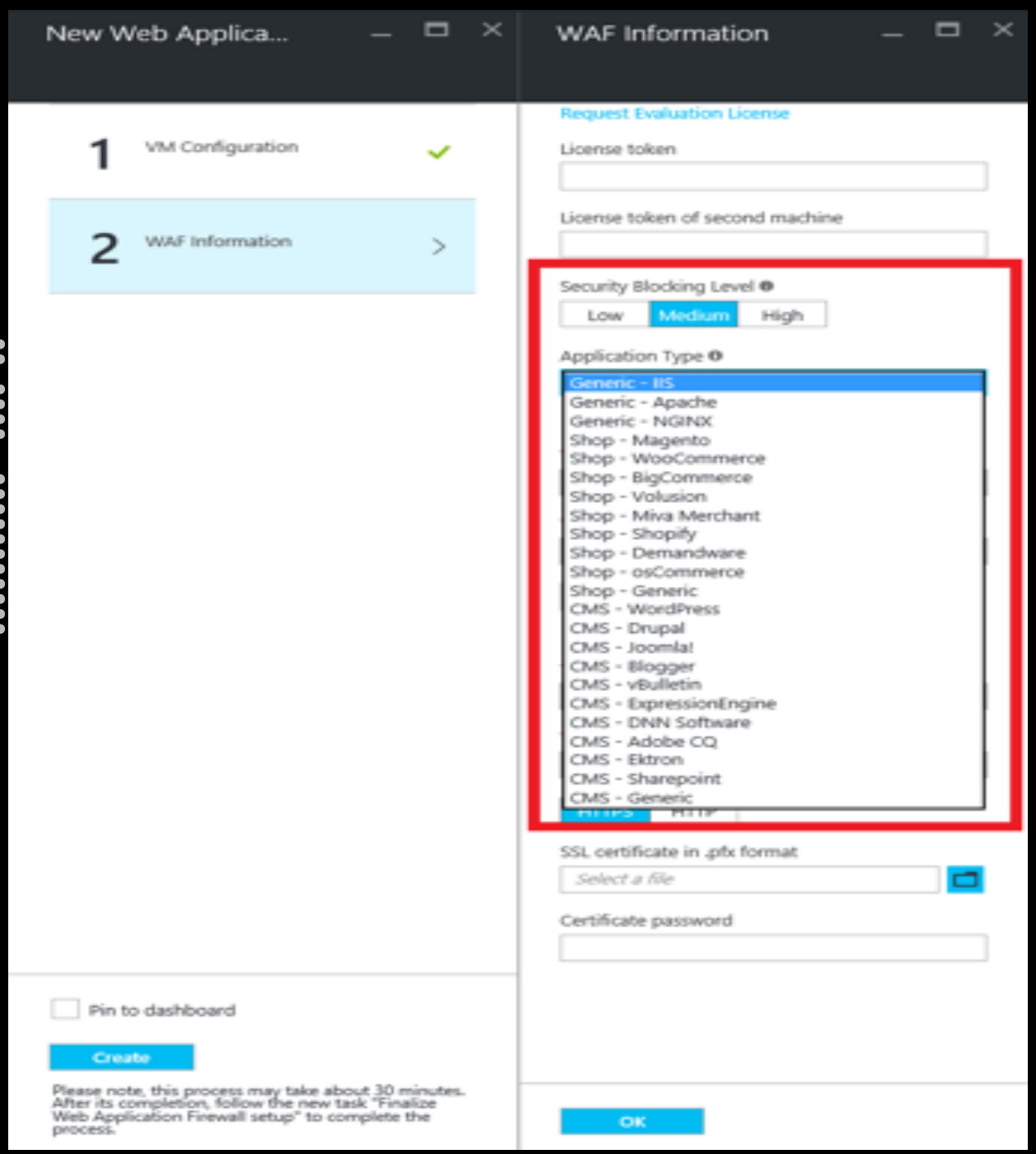
Security Center
Explore in Pow...
Search (Ctrl+/)
GENERAL
Overview
Security policy
Quickstart
Welcome
PREVENTION
Recommendations
Partner solutions
DETECTION
Security alerts
Prevention
Resource security health
Virtual machines
Networking
Applications
HIGH SEVERITY
13 resources
HEALTHY
21 resources
Partner soluti
3 Total
Policy
Detection
Security alerts
10 Sun
17 Sun
24 Sun
HIGH
19
MEDIUM
15
LOW
9
Prevention
Add tiles
Resource security health
Virtual machines
Networking
Applications
HIGH SEVERITY
13 resources
HEALTHY
21 resources
Recommendations
4 Total
Partner solutions
3 Total
Policy
Quickstart


Add a Web Application Firewall
Select an existing solution or create a new one
Create New
- Or -
Use existing solution
F5 Networks
demoapp01-waf
Add a web application firewall
Filter
WEB APPLICATION
STATE
SEVERITY
demoapp03
Open
High
testbip-ubu-01
Open
High
Recommendations
Filter
DESCRIPTION
Enable VM Agent
9 virtual mac...
Open
High
Add a web application firewall
2 web applic...
Open
High
Finalize web application firewall setup
2 web applic...
Open
High
Apply disk encryption
9 virtual mac...
Open
High


F5 WAF Solution
F5 Networks
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-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 build-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
PUBLISHER
F5 Networks
USEFUL LINKS
F5 Support Detail
F5 BIG-IP Local Traffic Manager
F5 BIG-IP Application Security Manager
F5 BIG-IP Licensing Information
F5 WAF Users Guide
Select a deployment model
Resource Manager
Create


New Web Applica...
1 VM Configuration
2 WAF Information
Pin to dashboard
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.
VM Configuration
Number of machines to deploy
2
* Host
demoapp03-waf
* Password
* Pricing tier
Standard_A4
* Resource group
demoapp03-asc9444
* Location
West US
* Subscription
c0e489f9-cf57-4472-a3ed-f6bc7c...
OK


New Web Applica...
WAF Information
1 VM Configuration
2 WAF Information
Request Evaluation License
License token
SOHYU-VJYXD-UKCX-IZMKP-TUOMRSJ
Security Blocking Level
Low Medium High
Application Type
Generic - IIS
Protected application
* Web Application Public IP
40.118.213.86
* Internal server port
80
HTTPS HTTP
Protected application
* Web Application Public IP
40.118.213.86
* Internal server port
443
HTTPS HTTP
SSL certificate in .pfx format
EIS-WildCard.pfx
EIS-WildCard.pfx
Certificate password
Pin to dashboard
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.
OK


New Web Applica...
WAF Information
1 VM Configuration
2 WAF Information
Request Evaluation License
License token
License token of second machine
Security Blocking Level
Low Medium High
Application Type
Generic - IIS
Generic - Apache
Generic - NGINX
Shop - Magento
Shop - WooCommerce
Shop - BigCommerce
Shop - Volusion
Shop - Miva Merchant
Shop - Shopify
Shop - Demandware
Shop - osCommerce
Shop - Generic
CMS - WordPress
CMS - Drupal
CMS - Joomla!
CMS - Blogger
CMS - vBulletin
CMS - ExpressionEngine
CMS - DNN Software
CMS - Adobe CQ
CMS - Ektron
CMS - Sharepoint
CMS - Generic
SSL certificate in .pfx format
Select a file
Certificate password
Pin to dashboard
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.
OK

DEMO – Getting Started in AWS Using Automation

*ASG = AutoScale Group

**Multiple availability zones not shown

Demo Full Stack Deployment using Cloudformation Templates

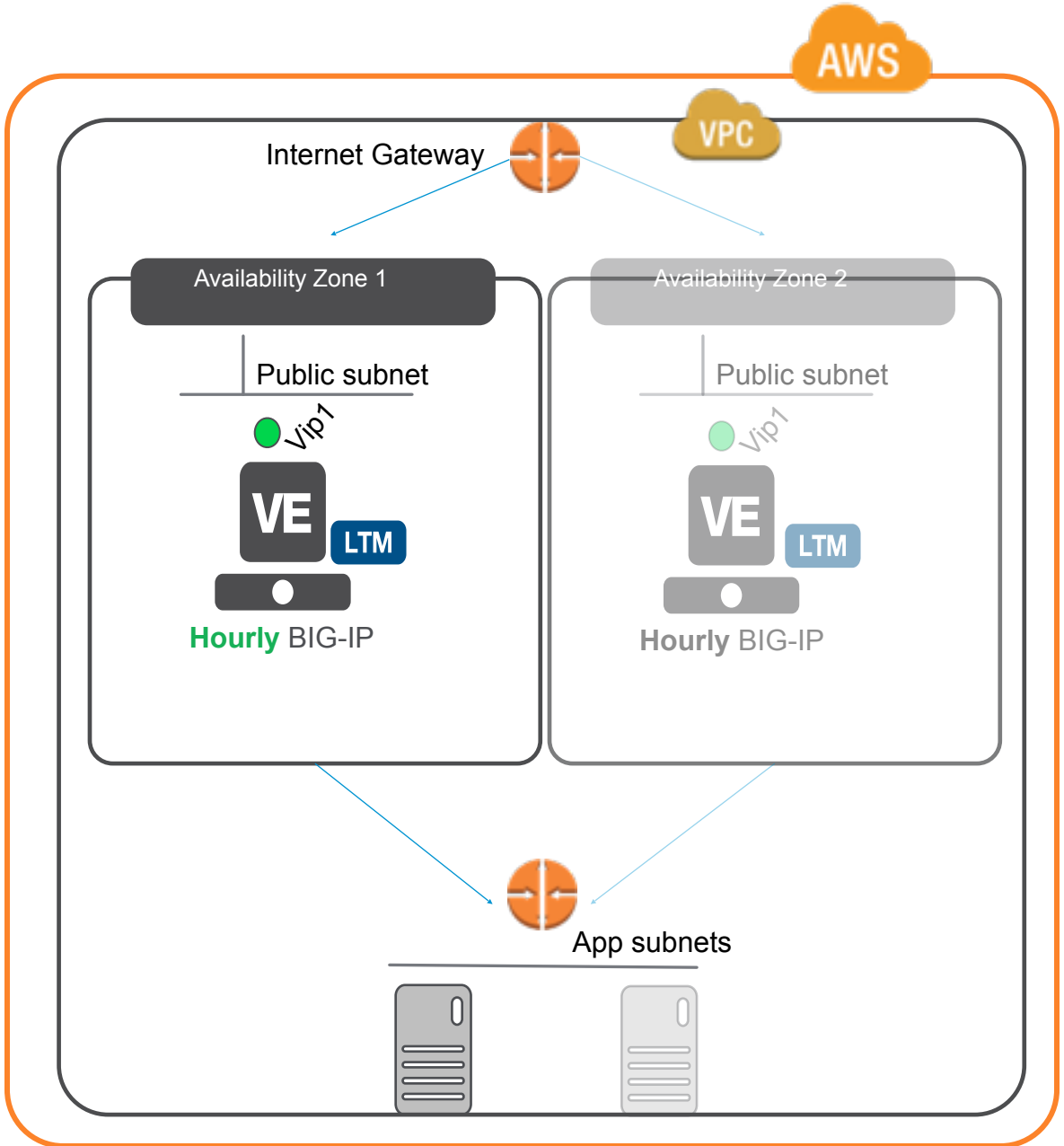
https://github.com/F5Networks/f5-aws-cloudformation

- 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

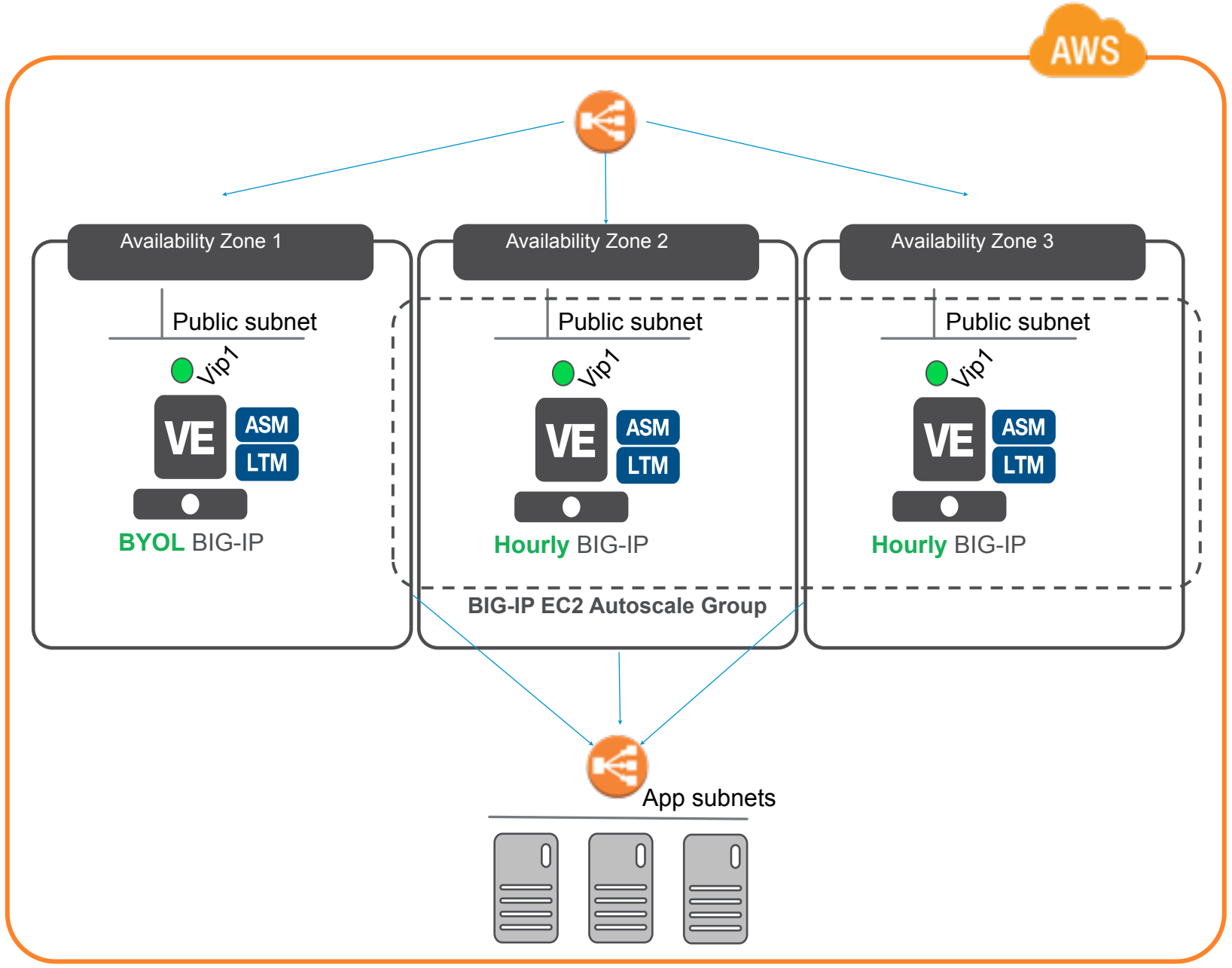
*ASG = AutoScale Group

**Multiple availability zones not shown

Demo Auto-scaled WAF

https://github.com/f5devcentral/f5-aws-autoscale

- 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

Marketplace Utility License	Bring Your Own License (BYOL)	Volume Licensing Subscription (VLS)

• On-demand utility pricing
  • Highest flexibility
  • Pay-as-you-go or annual subscription
	• Version Plus license (Individual and License Pools)
	  • Customer owned
	  • Can move across private and public clouds
		• Subscription discounts for 100+ applications
		  • 1- or 3-year terms
		  • Includes premium support

• Public cloud	• Public, private, and hybrid cloud	• Public, private, and hybrid cloud
• Best for deployment flexibility, on-demand consumption	• Best for few production workloads or existing licenses	• Best for large scale workload production, F5 for every app
• OpEx	• CapEx	• OpEx
via F5 Ready Cloud Provider	via F5 or Channel Partner	

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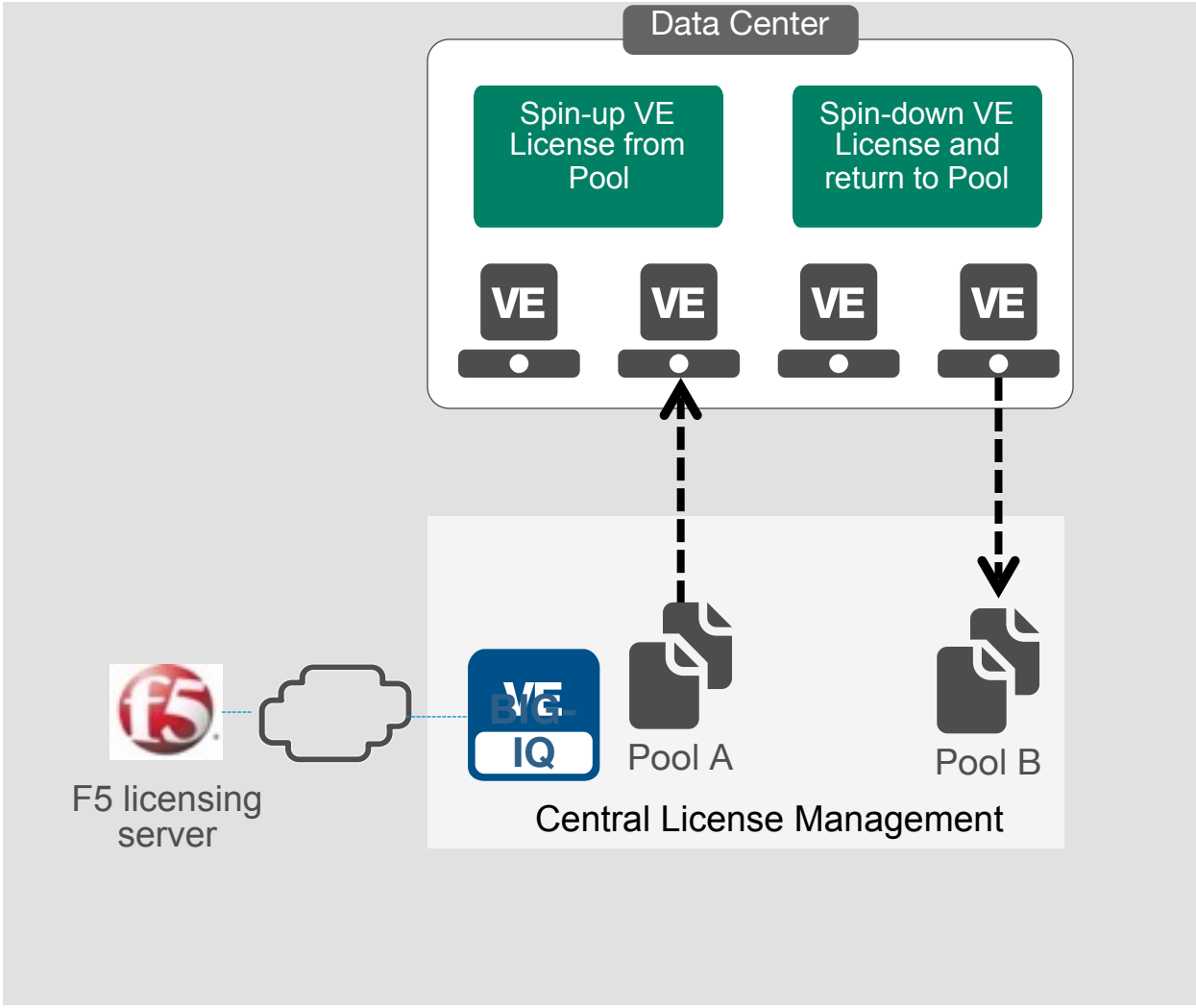
On-Demand License Pool Spin-Up

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

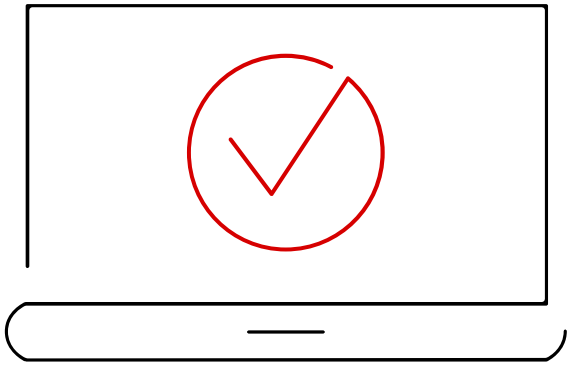
Use Case

- 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



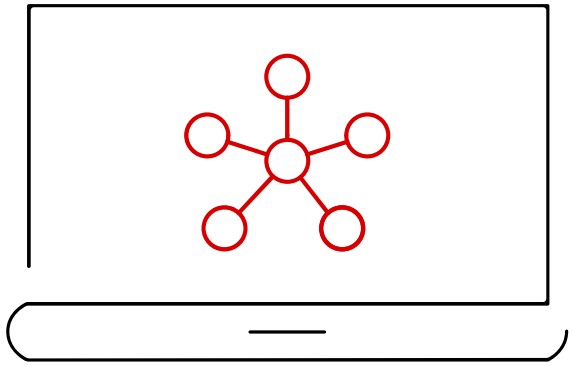
Wrap Up

How to Get Started



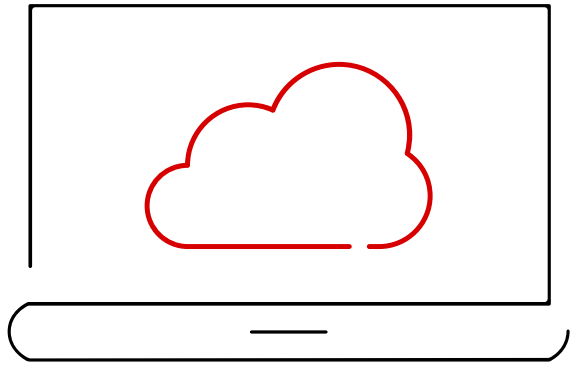
Get an Evaluation License

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.

awsmarketplace

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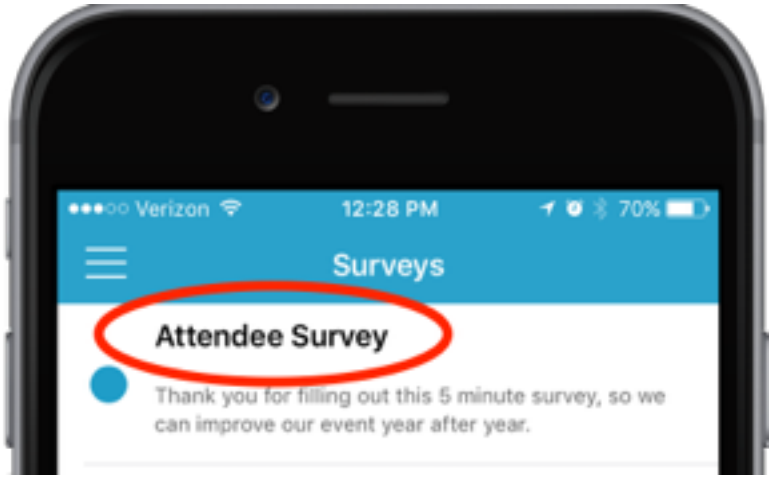
Give Feedback – Get Points!

- 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!



SOLUTIONS FOR AN APPLICATION WORLD