

F5, Red Hat Automation for Everyone - Ansible

Email E.Rabago@f5.com your “whatsmyip”

Lab environment:

<http://training.f5agility.com>

Class#:1651943542 Student#:



F5, Red Hat Automation for Everyone - Ansible

PRESENTED BY:

Ed Rabago, F5 Channel SE

WE MAKE APPS  FASTER.
SMARTER.
SAFER.

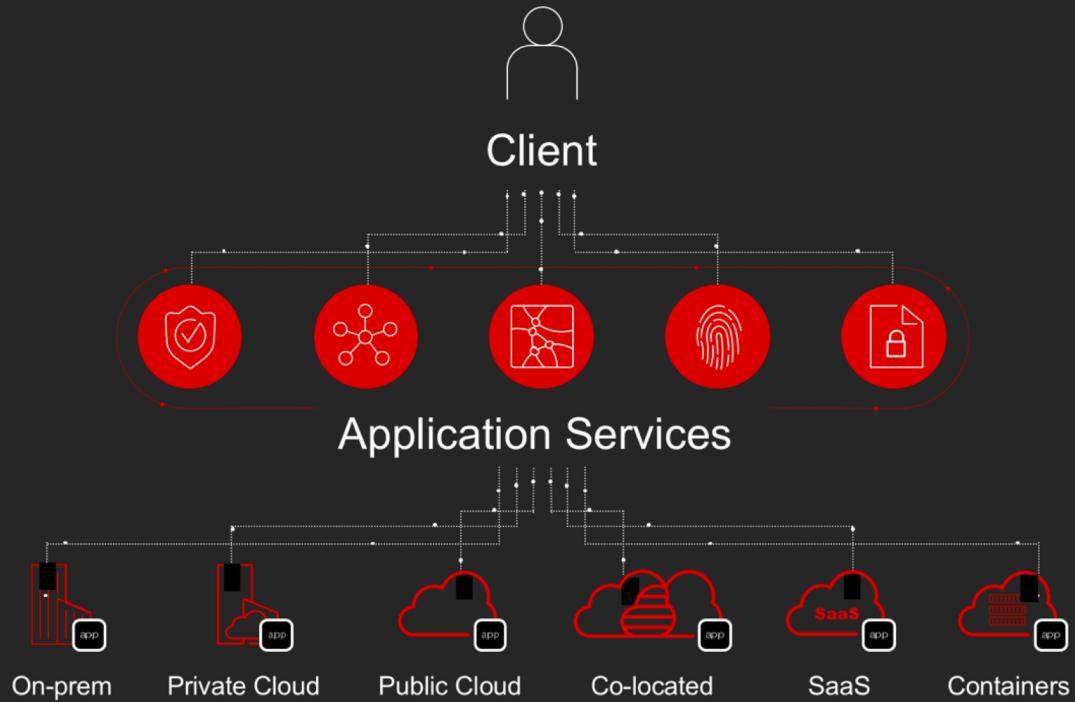


WELCOME AND INTRODUCTIONS

F5's business proposition...

Making Apps Faster, Safer, Smarter

The
Power
of a
Proxy



Reduce Risk

Increase Efficiency

FORTUNE
-50-

49 / 50

Fortune 50
companies

Don't be the
one left out



14 / 15

Top US
Commercial Banks



15 / 15

Executive Departments
of US Cabinet



10 / 10

Largest Global
Insurance Companies



10 / 10

"Best" US Retail
Companies



15 / 15

Global Telecom
Operations



9 / 10

Global Automotive
Companies



10 / 10

US Security
Companies



10 / 10

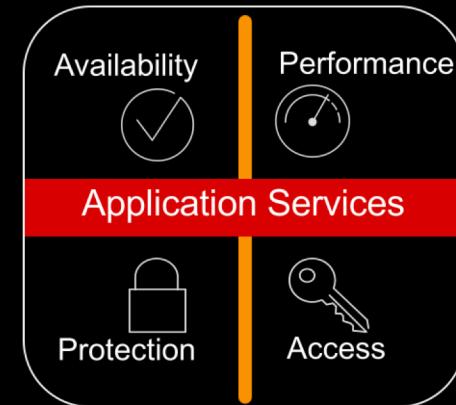
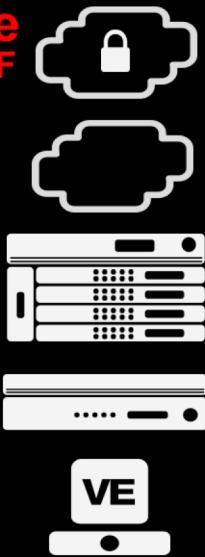
Telecommunications
Companies

App-centric Strategy

Faster, Smarter, Safer

The Power of a Proxy

Silverline
DDoS & WAF



User



- DDoS Protection
- DNS / Global Load Balancer
- Firewall / Intrusion Prevention
- Traffic Management / Load Balancer
- SSL Visibility / Inspection / Analytics
- Identity Access / Multi-factor Auth / Single Sign-On
- Web Application Firewall / Fraud Prevention



Consistent Services
Every App, Anywhere



NFW / WAF
SSL / IPSEC



DCFW / WAF
DDoS

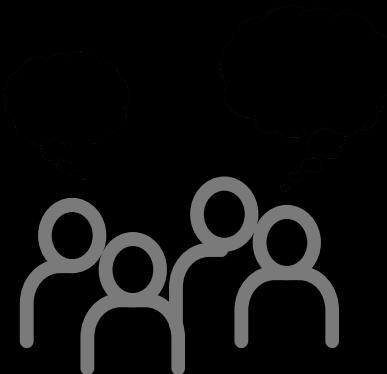


Ansible

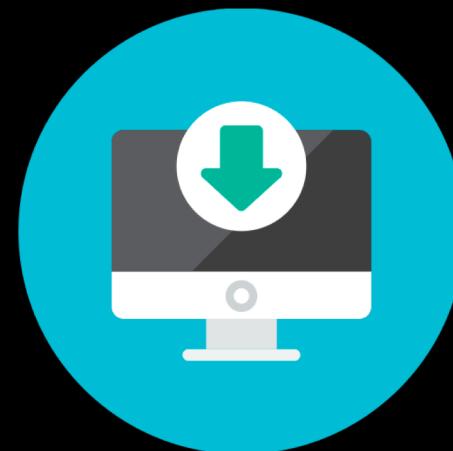
- A python-based command line engine
- Interprets & executes “Playbooks” that contain one or more “plays” or tasks

Ansible for network infrastructure

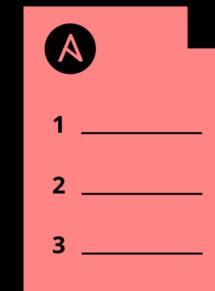
- Unify provisioning, configuration, and application deployment



Community with
2900+ contributors



10k downloads/day



1450+ Ansible modules

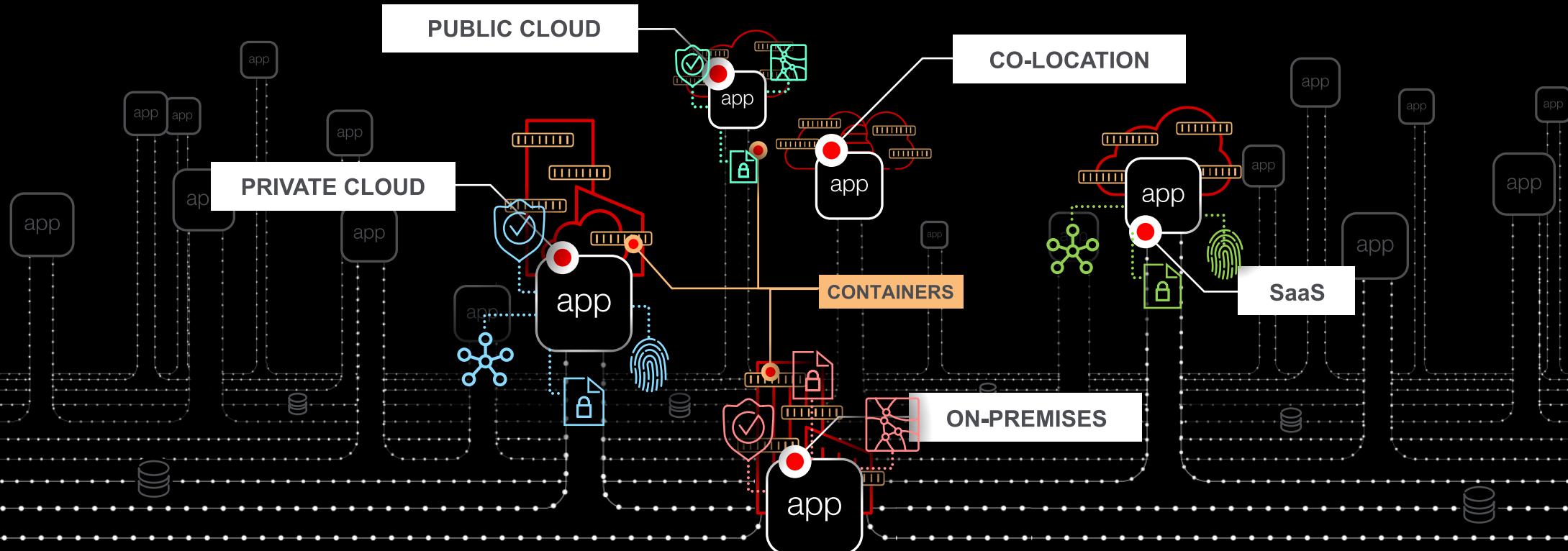
AUTOMATION & ORCHESTRATION

WHY SHOULD YOU CARE?

Digital Economy Makes Apps the Center of Your World



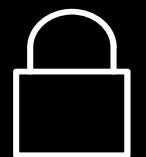
Applications Are Everywhere



FAST

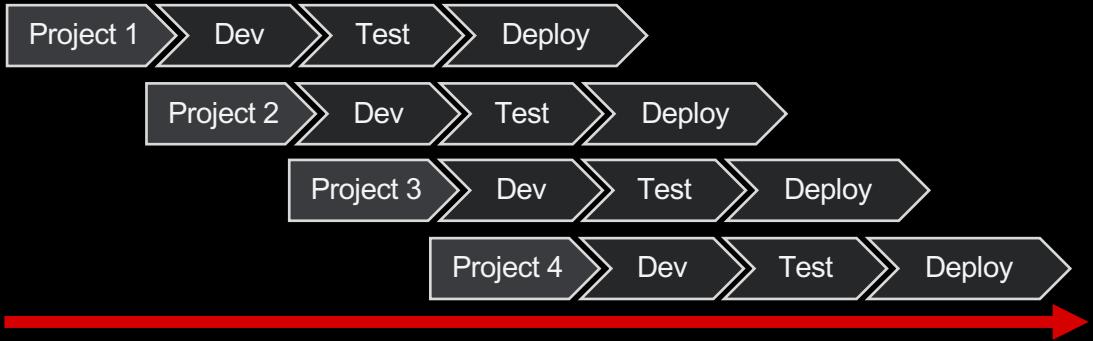


AVAILABLE



SECURE

The world in which we operate is changing



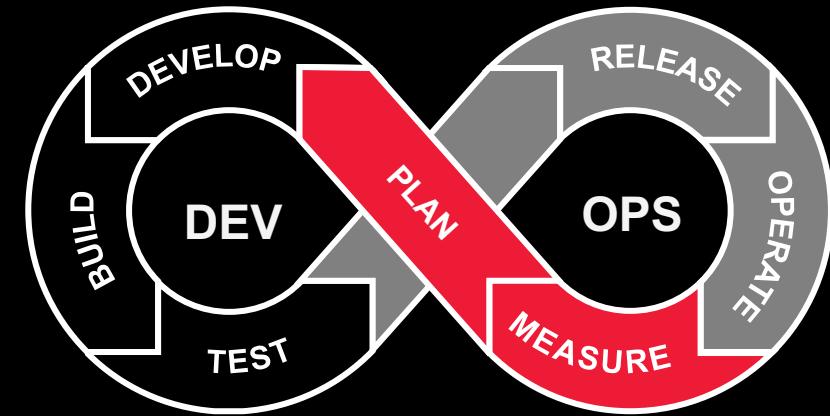
Waterfall Process

Infrequent change windows

Fewer, BIGGER changes

Lots of risk per change window

Lots of humans



Continuous Integration / Continuous Delivery

More frequent, smaller changes

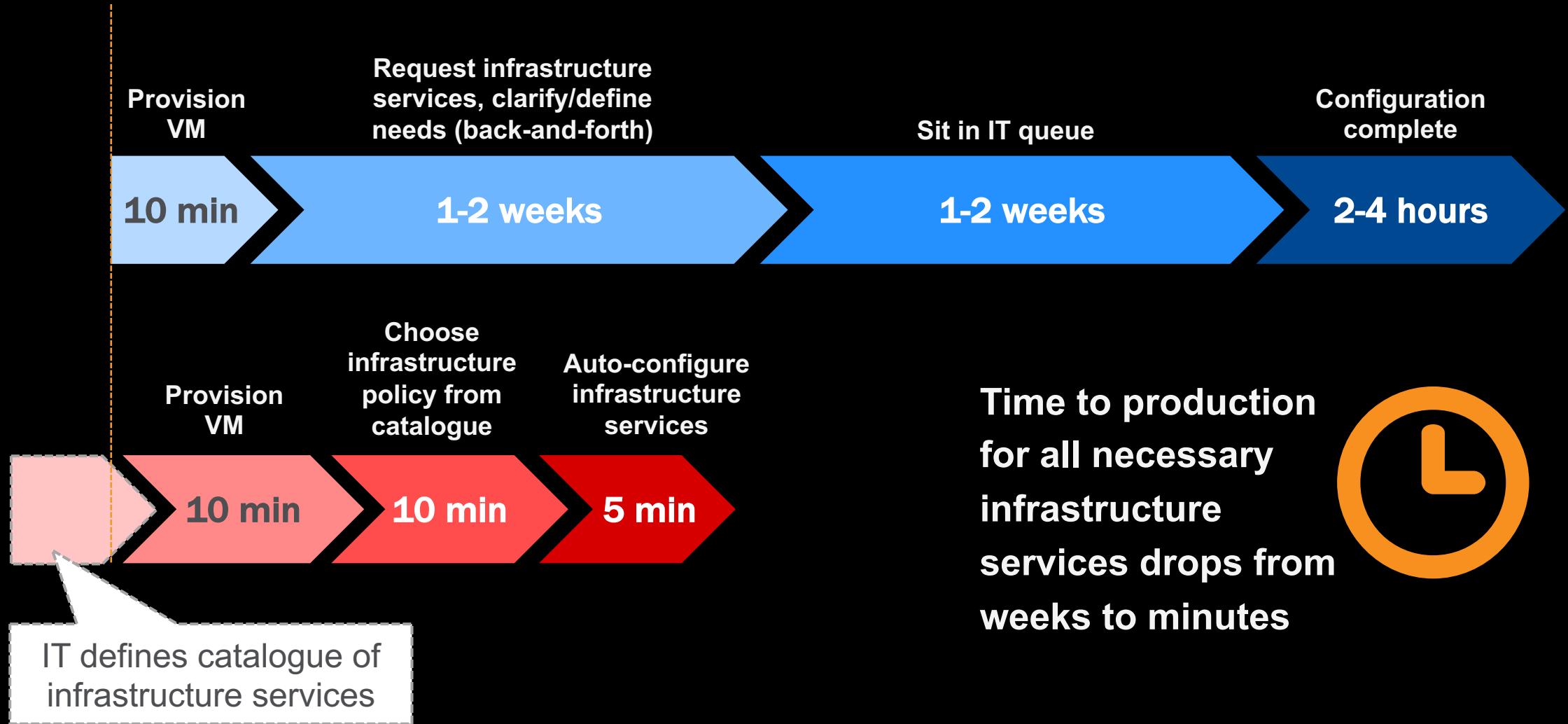
Less risk per change

Fail fast, fail often, fail forward

Lots of robots

Operational Agility – Essential for Cloud

Infrastructure Services



Where is NetOps in an Agile CI/CD world?

The OSI Model of Networking...

Please don't ask
about this...

L7: Application

L6: Presentation

L5: Session

L4: Transport

L3: Network

L2: Data Link

L1: Physical



Black Magic

Oh Yeah... We Got
this



What's the biggest
challenge for DevOps?

Applications

What is NetOps
biggest challenge?

DevOps

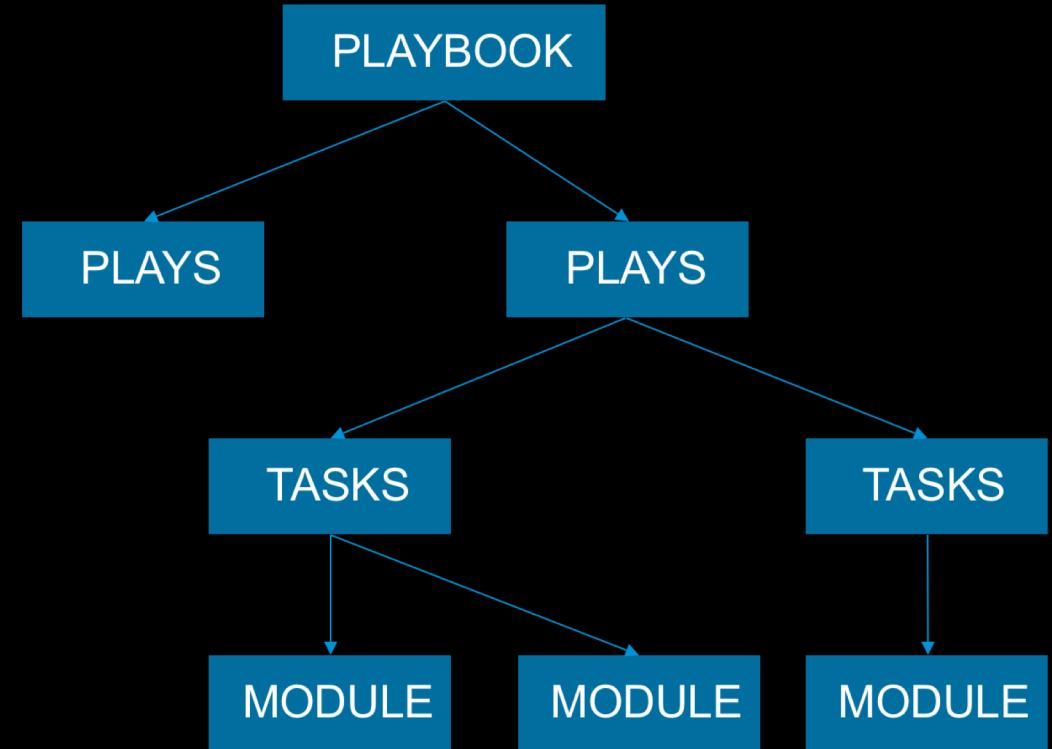


DEVELOPERS CHOOSE

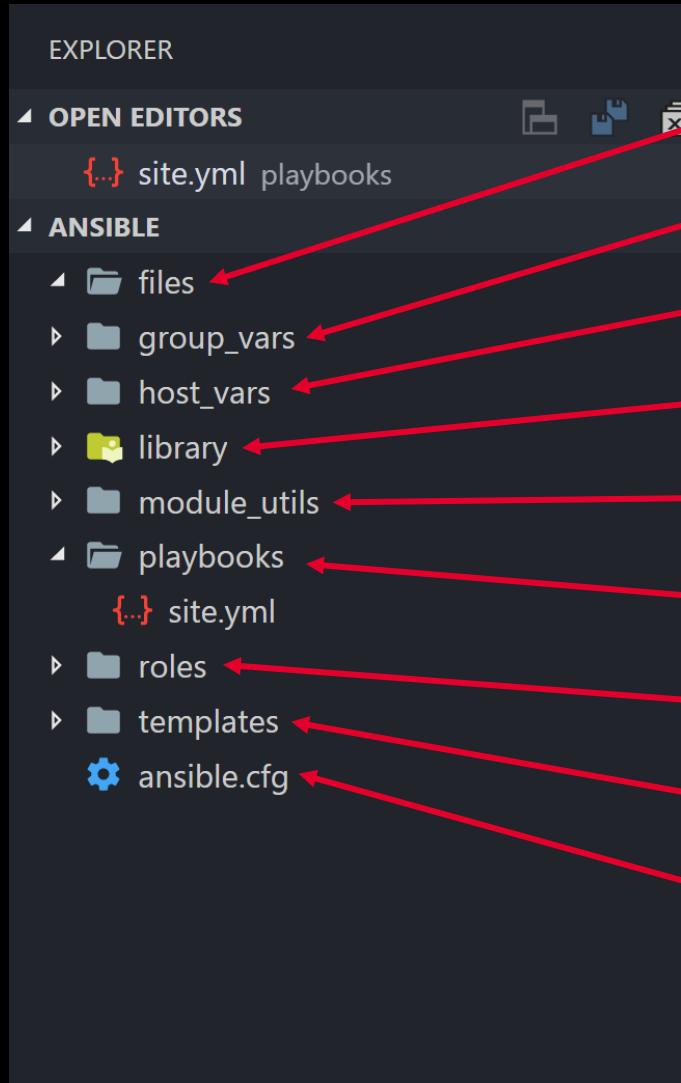
ANSIBLE

Ansible Components

- **Ansible Core (free)**- provides the Ansible runtime and allows execution of playbooks
- **AWX (free)** - provides a web-based user interface, REST API, and task engine built on top of Ansible. It is the upstream project for Tower
- **Ansible Tower (\$\$\$)**- the management layer, that enhances team collaboration, extensibility, scalability and visibility. Ansible Tower also provides the ability to drive Ansible dynamically through APIs.
 - Scheduling and Backups
 - History & Reporting
 - Deployment state
 - Role Base Access Control



Project folder structure



- Files referenced by a playbook
- Variables that apply to particular groups
- Variables that apply to particular hosts
- Additional modules specific to this project
- Supporting code for modules
- Playbooks
- Groups of tasks and variables
- Source Jinja2 template files
- Main Ansible config file

Ansible Definitions

ansible.cfg

- **Main Configuration file to change default behaviors**
- Local file takes precedence

Example:

```
[defaults]
inventory=./inventory
deprecation_warnings=False
#library=./library
#callback_plugins=./library/plugins
#library=/home/mike/library/library
#module_utils=/home/mike/library/library/module_utils
#ANSIBLE_LIBRARY=/home/mike/library/library
```

Ansible Definitions

Inventory

- **Groups and Lists of endpoints to perform tasks on**
 - Can be entered as IP addresses or resolvable FQDNs

Example:

```
[bigips]
10.1.1.245
```

```
[appservers]
10.1.20.17
10.1.20.20
```

```
[webservers]
10.1.20.15 ansible_user=root
10.1.20.16 ansible_user=root
```

Ansible Definitions

Playbook

- Multiple tasks or plays written together in a single file
- Written in YAML, a self-documenting language

```
--
```

```
- name: Test bigip_facts
  hosts: bigip
  gather_facts: no
  connection: local

  tasks:
    - name: Get all of the facts from my BIG-IP
      bigip_facts:
        server: "{{ inventory_hostname }}"
        user: "admin"
        password: "admin"
        include: "system_info"
        validate_certs: "no"
```

Lab 1 – Speed of Human

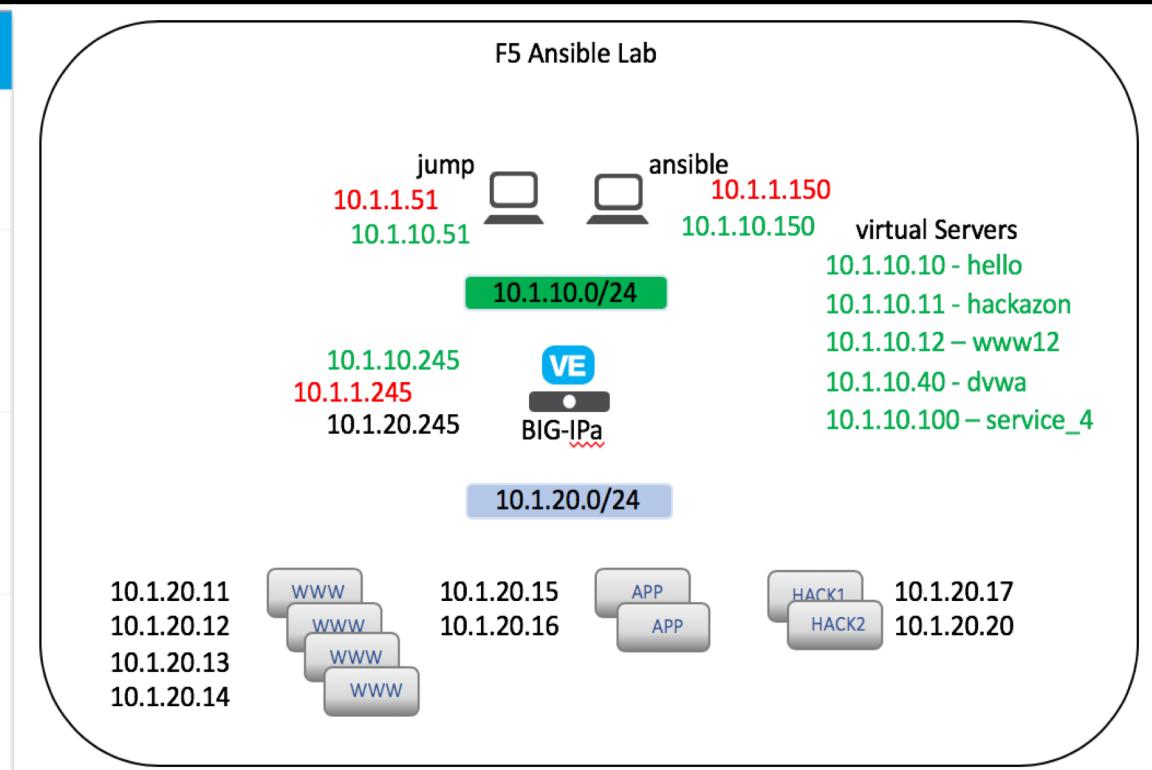
Lab guide: <https://ansible-workshop.readthedocs.io>

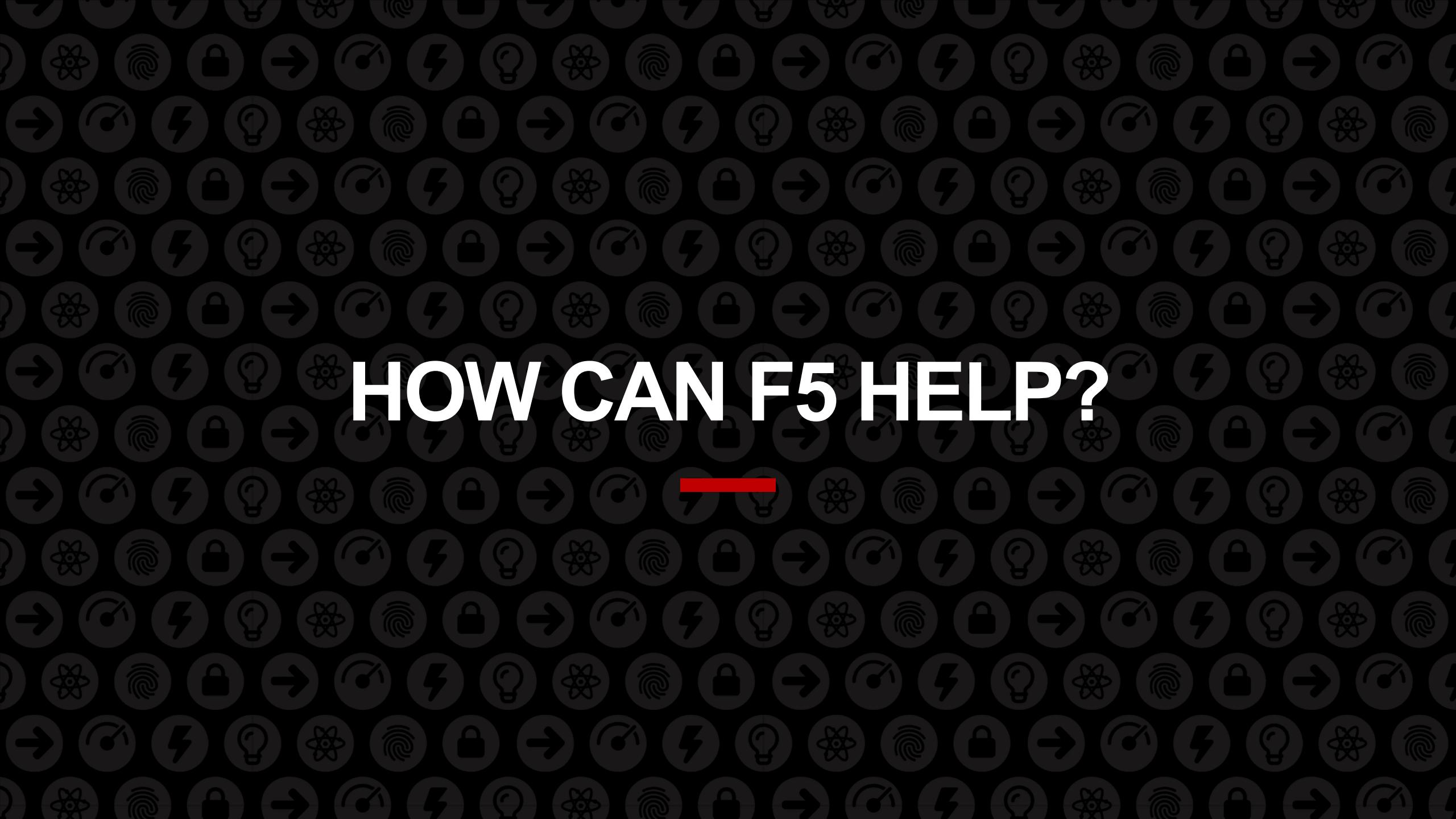
2.1.1. Task – Deploy app to webservers

2.1.2. Task – Configure F5 BIG-IP

2.1.3 Task – Configure F5 BIG-IP (iApp)

	VLAN/IP ADDRESS(ES)	CREDENTIALS
Jump Host	<ul style="list-style-type: none">Management: 10.1.1.51External: 10.1.10.51	<ul style="list-style-type: none">f5student/f5DEM0s4u
Ansible Host	<ul style="list-style-type: none">Management: 10.1.1.150External: 10.1.10.150Internal: 10.1.20.150	<ul style="list-style-type: none">root/passwordadmin/password
BIG-IP01	<ul style="list-style-type: none">Management: 10.1.1.245External: 10.1.10.245Internal: 10.1.20.245	<ul style="list-style-type: none">admin/admin
Lamp Host	<ul style="list-style-type: none">Management: 10.1.1.252External: 10.1.10.252Internal: 10.1.20.252	<ul style="list-style-type: none">root/default





HOW CAN F5 HELP?

Skills Transformation

Enabling NetOps to participate in DevOps

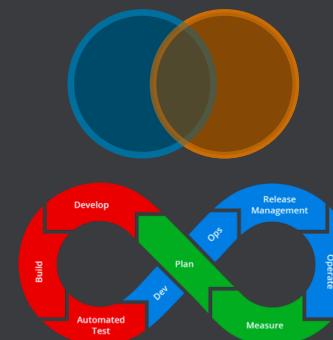
Super-NetOps



- DevOps Concepts
- Infrastructure as Code
- Automation Toolchains

NetOps

Enablement



Super
NetOps

DevOps

TRANSFORMATION



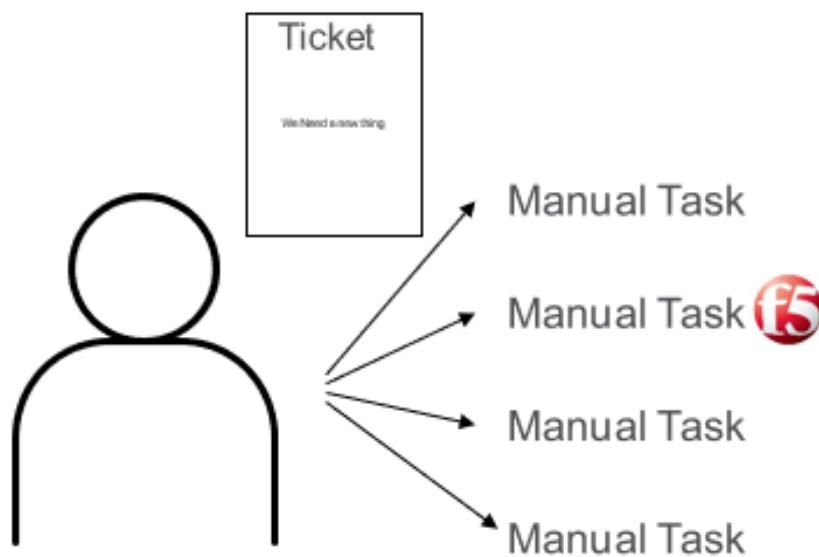
F5 Super-NetOps Training Series



WATCH THE VIDEO

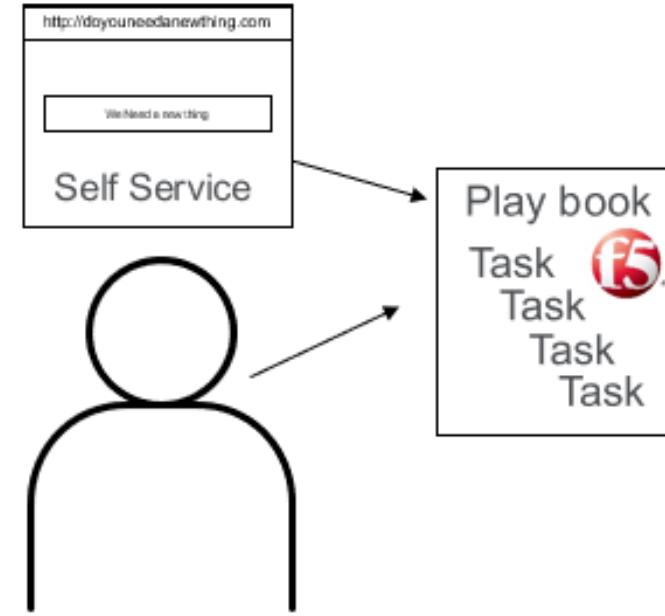
F5 is developing a free, on-demand version of our popular instructor-led automation courses. This training program is designed to help Network Operations professionals make the transition to Super-NetOps.

Our Evolving Customers



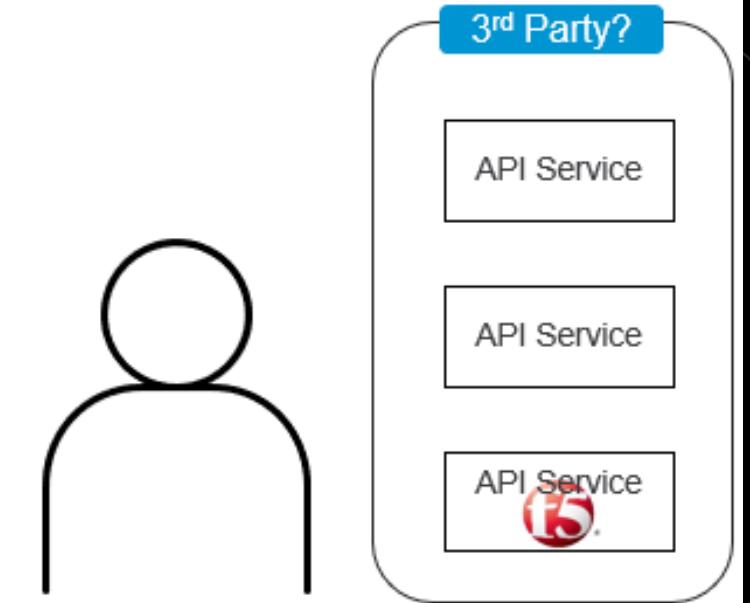
NetOps

- Manual Processes
- Bottleneck – Human Speed
- Inconsistent services
- Increase risk



Super-NetOps

- Create Automation playbooks
- Frictionless BIG-IP services
- Consistent services
- Minimize risk



NetSecDevOps

- Select Services
- Build Integrations
- More 'what' than 'how' plus the ability to enable consumption

F5 + ANSIBLE

Which tool should I use?

Source control



CI



Artifact repositories



Deployment targets



Test tools



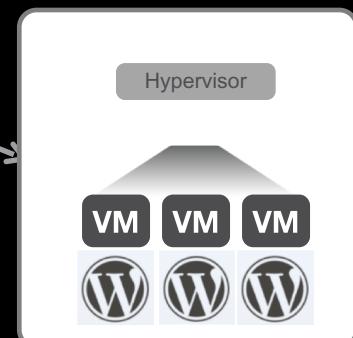
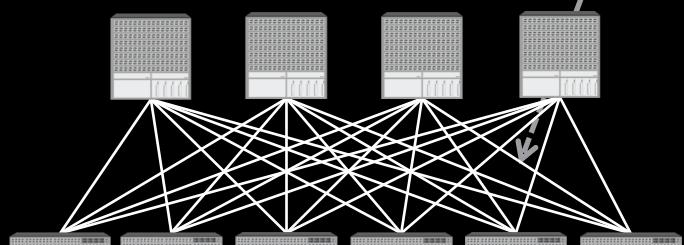
Infra prov/ config mgmt



Notifications



DevOps Islands Of Automation



Why Ansible?



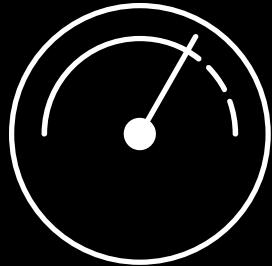
SIMPLE For NetOps

Human readable automation

Minor coding skills needed

Tasks executed in order

Get productive quickly



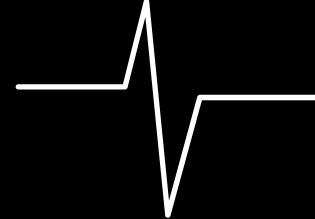
POWERFUL For DevOps

App deployment

Configuration management

Workflow orchestration

Orchestrate the app lifecycle



AGENTLESS Easy Integration

Agentless architecture

Uses OpenSSH & WinRM

No agents to exploit or update

More efficient & more secure

F5 BIG-IP + Ansible

- **Ansible is a leading IT automation tool of choice**
- **Current Stable release is version 2.6**
- **BIG-IP 12.x and above**

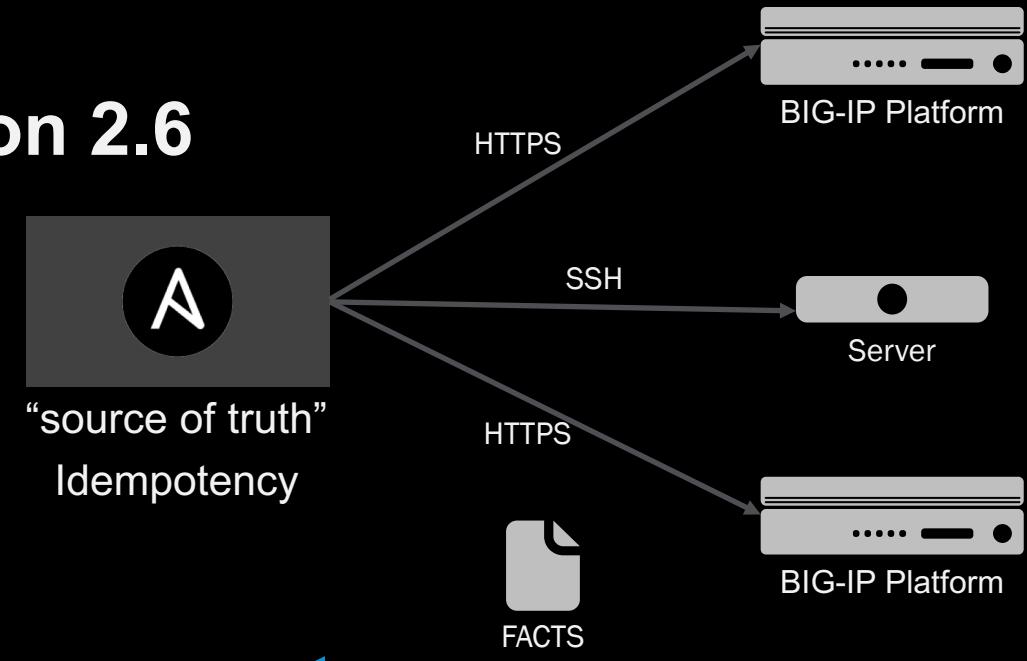
Ansible Modules:

F5 – 96

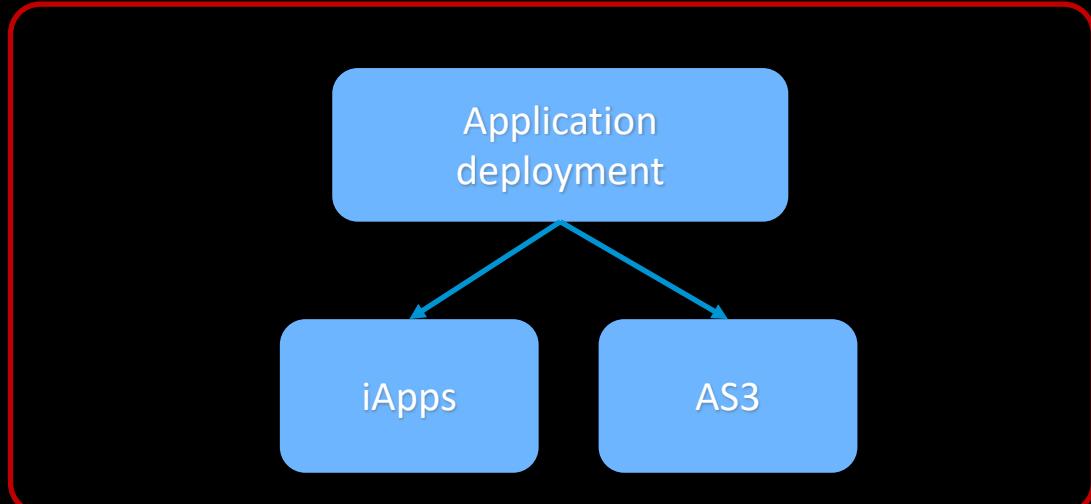
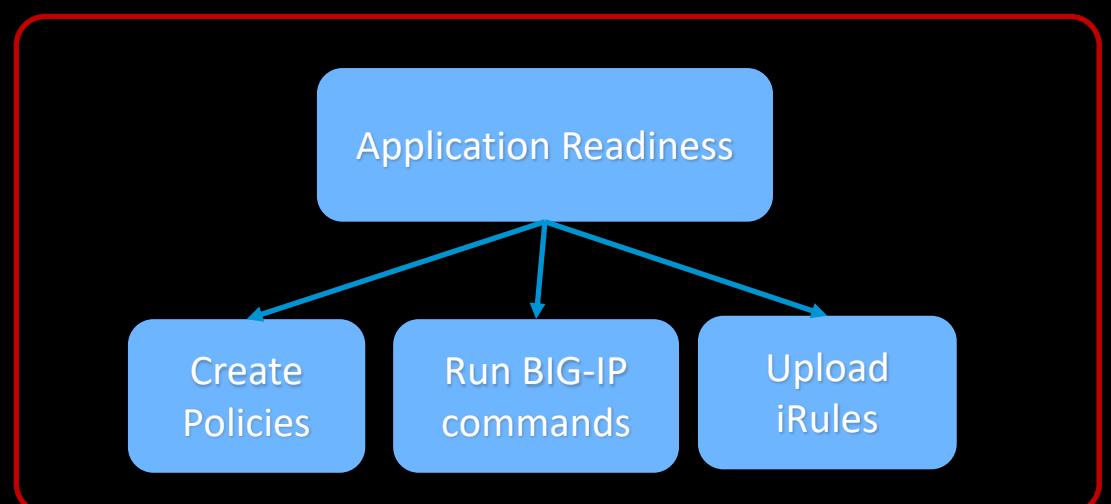
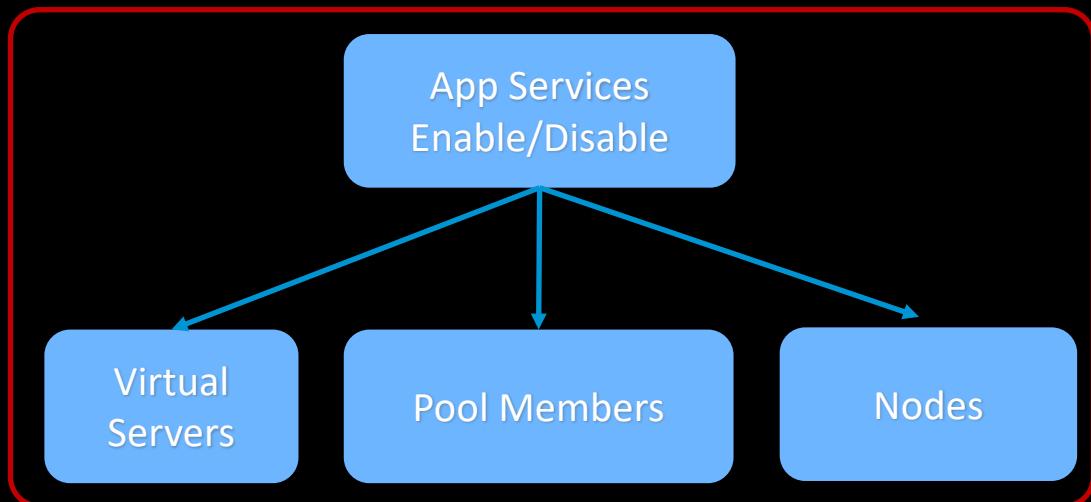
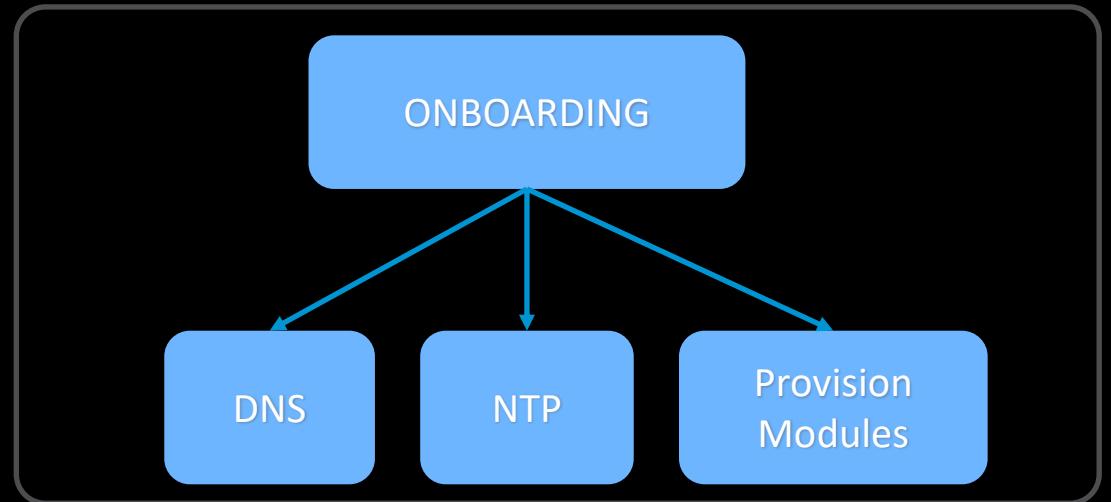
PAN – 24

Cisco Routes/Switches – 97

Cisco ACI – 51



BIG-IP Administrative work in minutes



F5 Playbook Example

Playbook - Group of Plays

-- Play - Configure Networking on BIG-IP (*a set of tasks*)

-- Role – CreateNetworks

-- Task = "Create External VLAN" (*user given name*)

-- Module = bigip_vlan (built by F5)

Acts on parameters you define

-- Task = "Create External SelfIP" (*user given name*)

-- Module = bigip_selfip (built by F5)

Acts on parameters you define

```
- name: Configure NTP server on BIG-IP
  bigip_device_ntp:
    server: "{{ inventory_hostname }}"
    user: "{{ username }}"
    password: "{{ password }}"
    ntp_servers: "{{ ntp_servers }}"
    validate_certs: False
  delegate_to: localhost

- name: Manage SSHD setting on BIG-IP
  bigip_device_sshd:
    server: "{{ inventory_hostname }}"
    user: "{{ username }}"
    password: "{{ password }}"
    banner: "enabled"
    banner_text: " {{ banner_text }}"
    validate_certs: False
  delegate_to: localhost

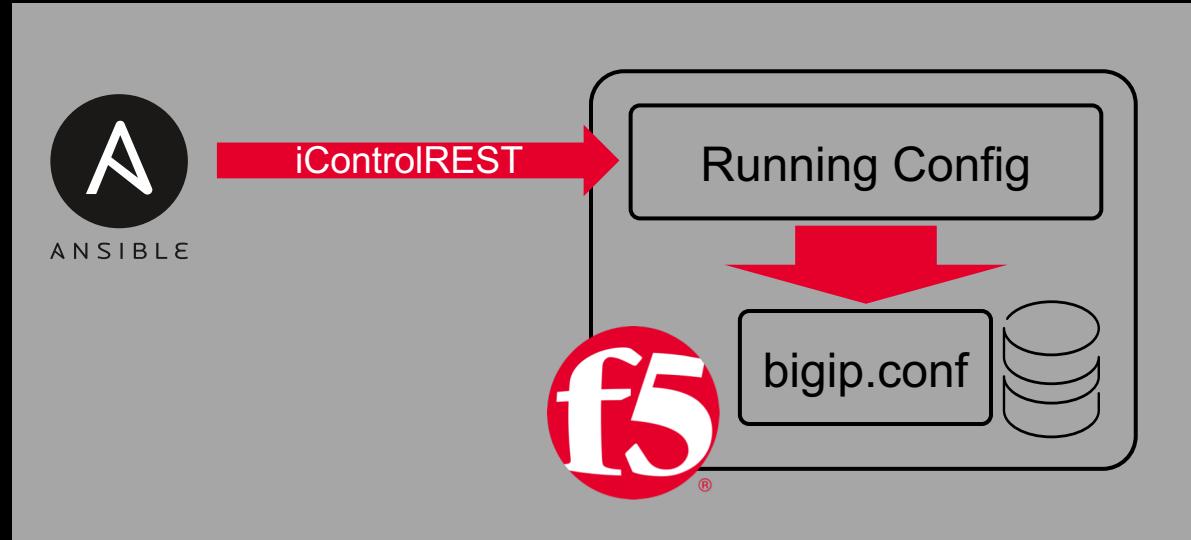
- name: Manage BIG-IP DNS settings
  bigip_device_dns:
    server: "{{ inventory_hostname }}"
    user: "{{ username }}"
    password: "{{ password }}"
    name_servers: "{{ dns_servers }}"
    search: "{{ dns_search_domains }}"
    ip_version: "{{ ip_version }}"
    validate_certs: False
  delegate_to: localhost
```

Saving the running configuration

Ansible modules use iControlREST,
which modifies the **running
configuration**

Like tmsh, you need to save the
config to disk to survive a reboot

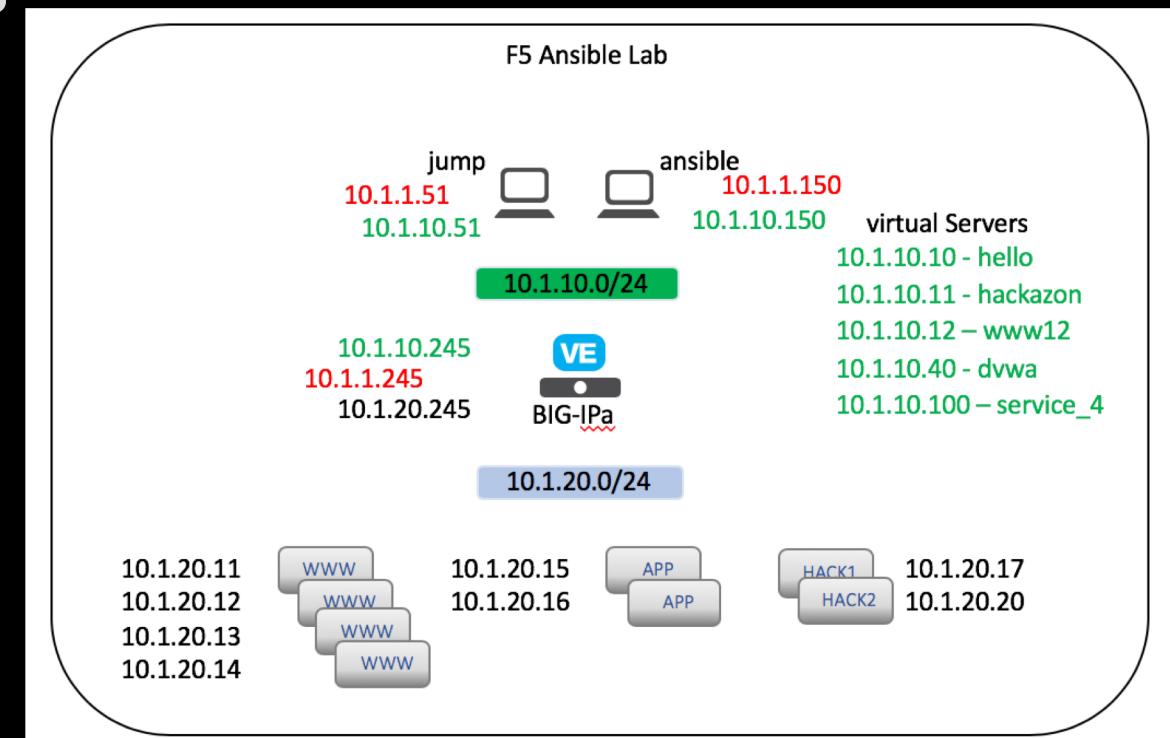
The **bigip_config**
module with the
save: yes parameter
will write your changes
to disk



```
1 - name: Save the running configuration of the BIG-IP
2   bigip_config:
3     save: yes
4     server: "lb.mydomain.com"
5     password: "secret"
6     user: "admin"
7     validate_certs: "no"
8     delegate_to: localhost
```

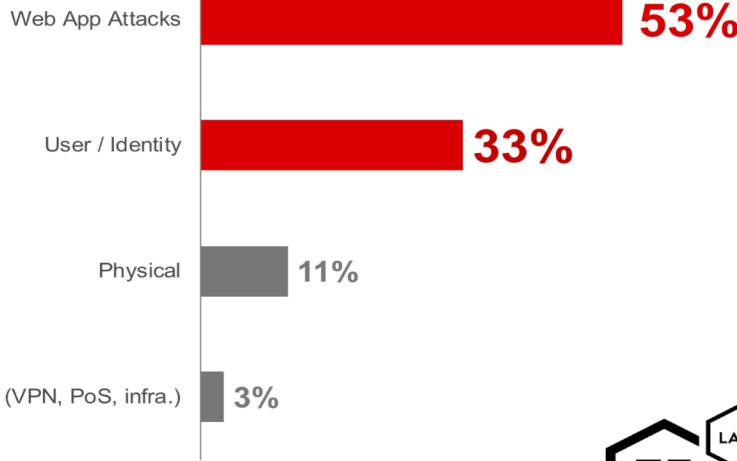
Lab 2 – Speed of Automation

- 2.2.1. Deploy new app servers
- 2.2.2. Deploy F5 BIG-IP App Services
- 2.2.3. Modify pool member state
- 2.2.4. Simulate Blue/Green updates



Threat Intelligence

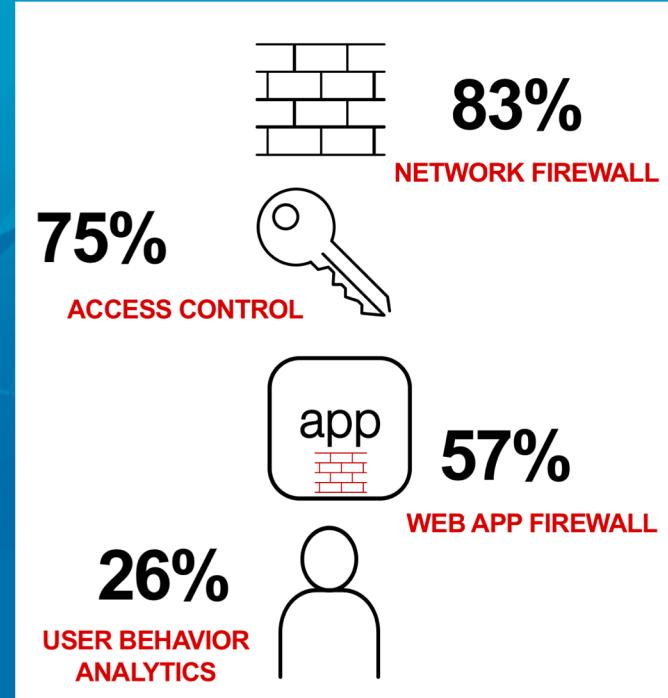
Report: Lessons Learned from a Decade of Data Breaches



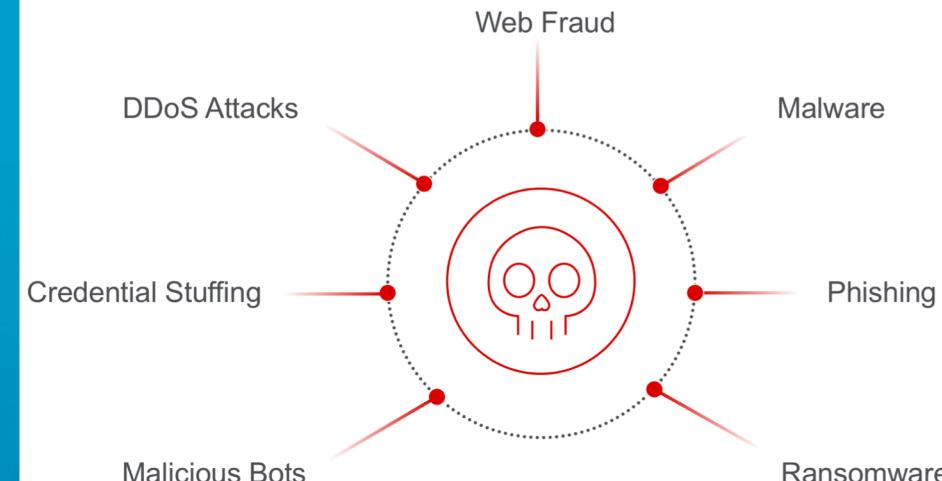
Web app attacks are the #1 single source entry point of successful data breaches...



What technologies do you use to protect apps?



What are today's common threats?

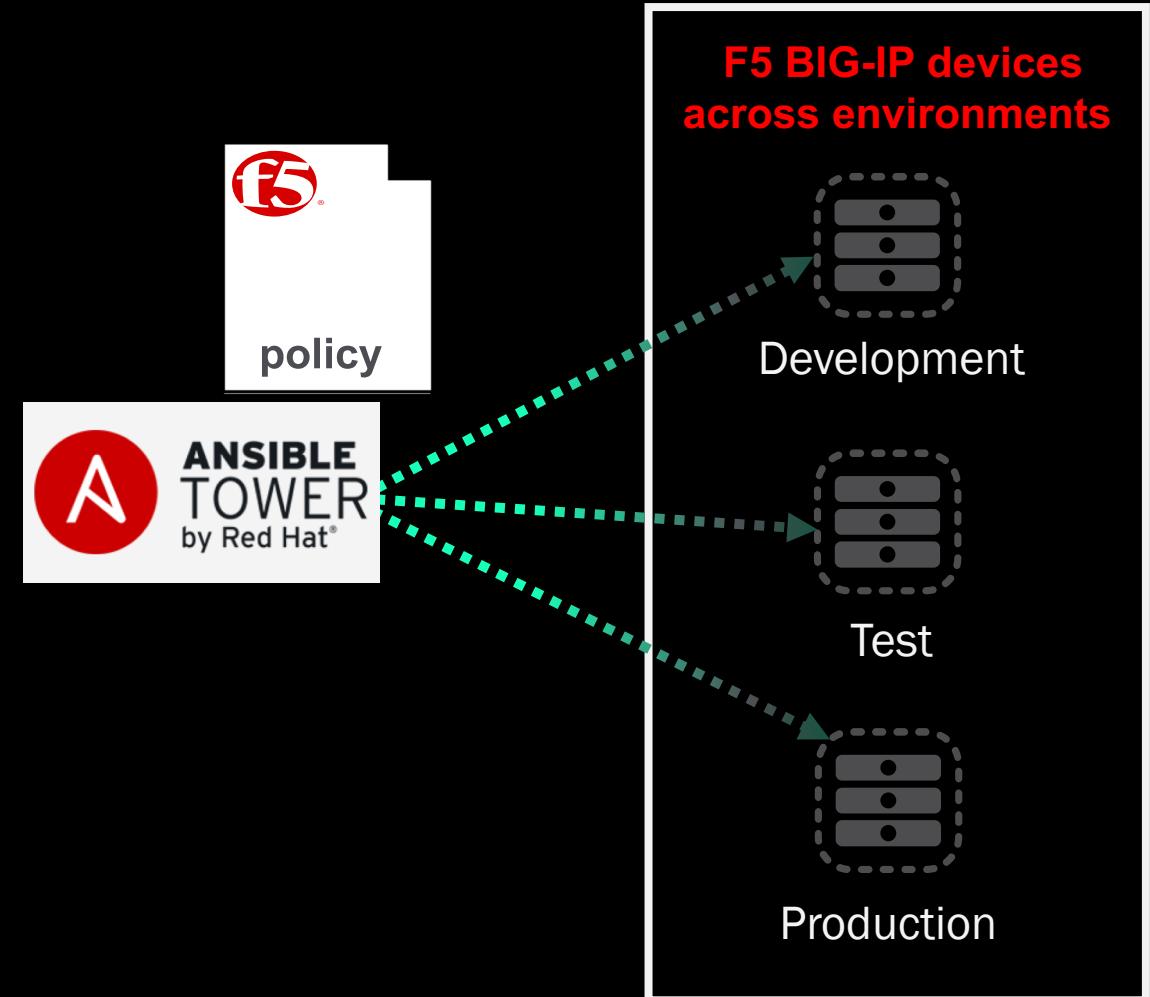


Which technology is best suited to mitigate these threats?

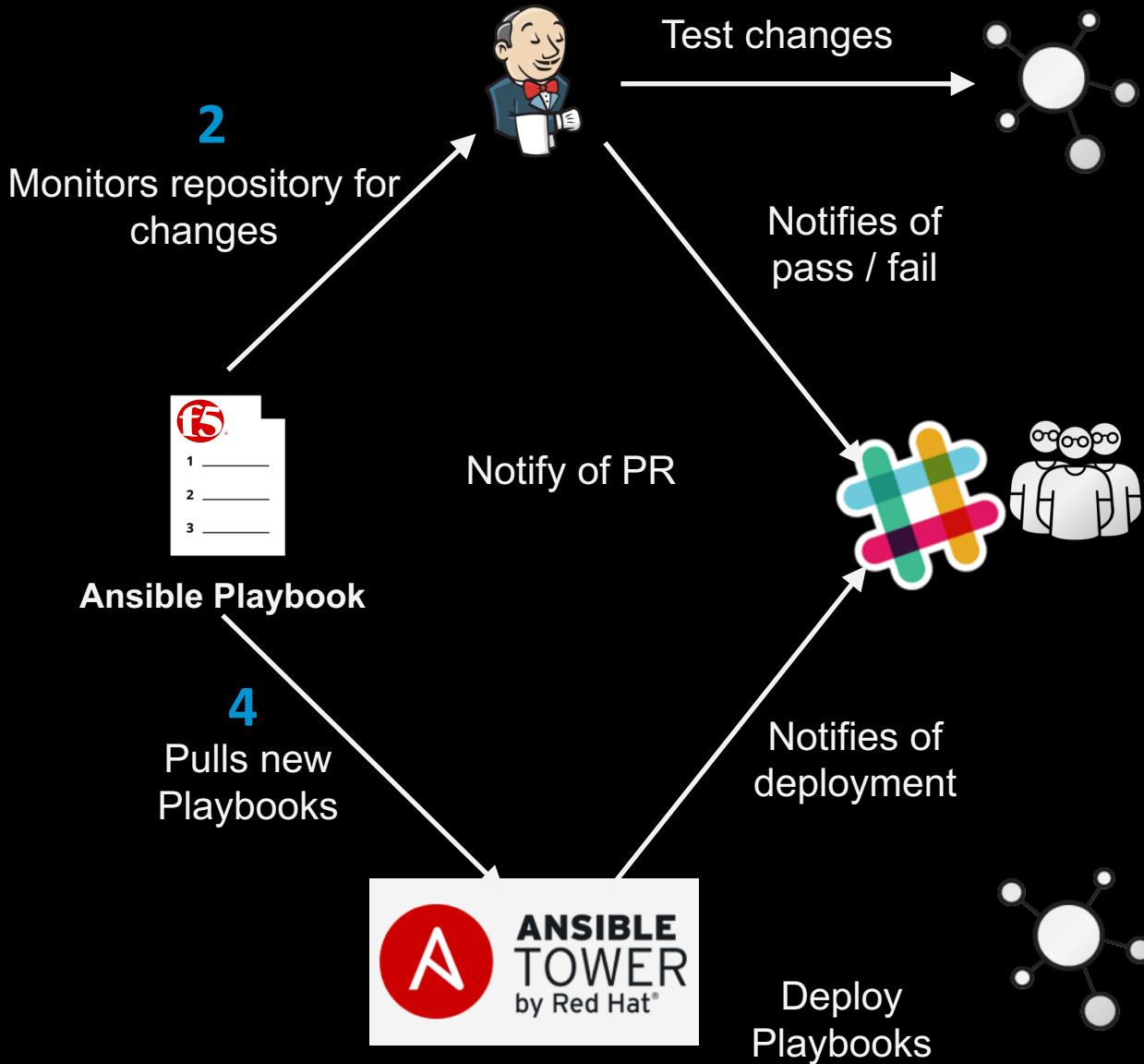
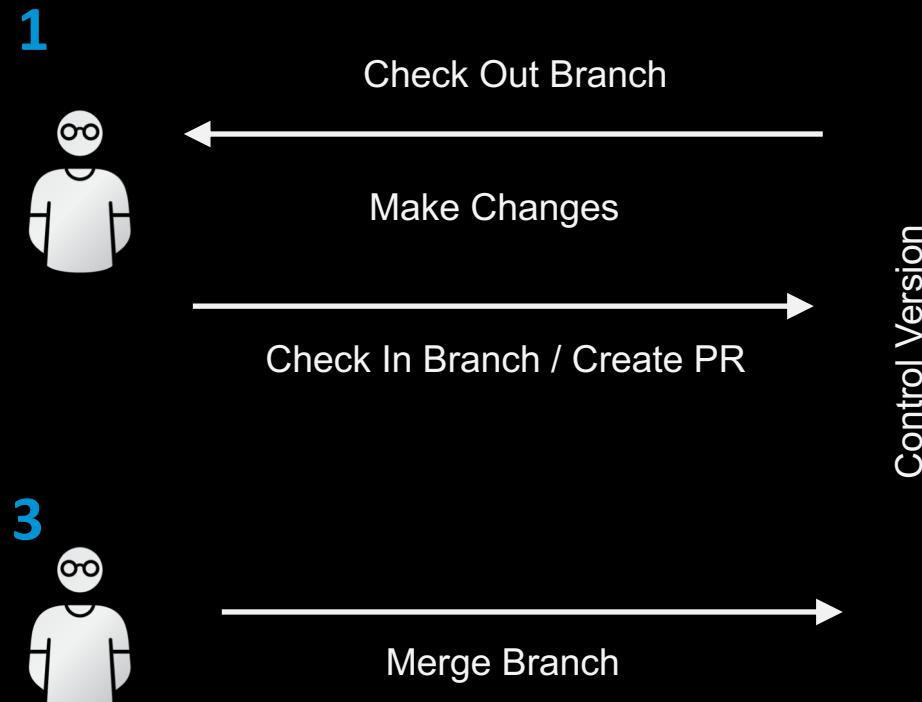
Security Policy Management

Build BIG-IP policies & deploy across environments with consistency using

- Ansible F5 modules (LTM & ASM)
- App-services iApp (APM & AFM)



F5 CI Workflow



Application Services

Imperative



Declarative



AS3 JSON Payload

AS3 Class

ADC Class

Tenant Class

Application Class

Service Class

Pool Class

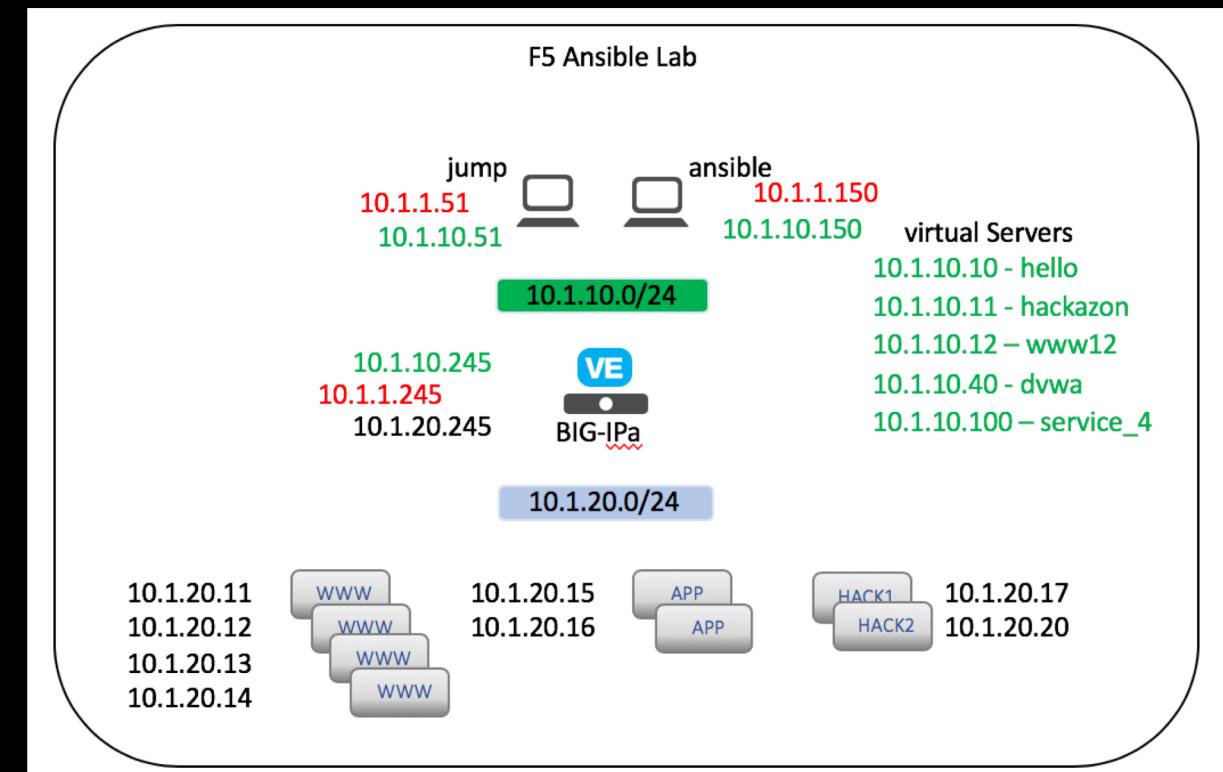
```
"class": "AS3",
"action": "deploy",
"persist": true,
"declaration": {
  "class": "ADC",
  "schemaVersion": "3.0.0",
  "id": "example-declaration-01",
  "label": "Sample 1",
  "remark": "Simple HTTP application with round robin pool",
  "Sample_01": {
    "class": "Tenant",
    "defaultRouteDomain": 1,
    "Application_1": {
      "class": "Application",
      "template": "http",
      "serviceMain": {
        "class": "Service_HTTP",
        "virtualAddresses": [
          "10.0.1.10"
        ],
        "pool": "web_pool"
      },
      "web_pool": {
        "class": "Pool",
        "monitors": [
          "http"
        ],
        "members": [
          {
            "servicePort": 80,
            "serverAddresses": [
              "192.0.1.10",
              "192.0.1.11"
            ]
          }
        ]
      }
    }
  }
}
```

Lab 3 – F5 App Deployment Workflows

2.3.1. Task – Deploy F5 App Services using seed file

2.3.2. Task – Deploy F5 App Services using iApp

2.3.3. Task – Deploy F5 App Services using App Services 3 (AS3)





TOWER EMPOWERS TEAMS TO AUTOMATE

CONTROL

Scheduled and centralized jobs

KNOWLEDGE

Visibility and compliance

DELEGATION

Role-based access and self-service

SIMPLE

Everyone speaks the same language

POWERFUL

Designed for multi-tier deployments

AGENTLESS

Predictable, reliable, and secure

AT ANSIBLE'S CORE IS AN OPEN-SOURCE AUTOMATION ENGINE

Ansible Tower

HTTP Application Deployment Demo

- Create VS, Pool, Members
- Enable/Disable Pool Members
- Deploy VS with WAF



Hope it works...

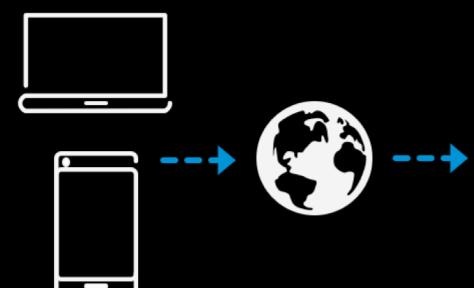
https://www.flickr.com/photos/daniel_gies/5052886953

Introducing BIG-IP Per-App VE

Frictionless Adoption by DevOps

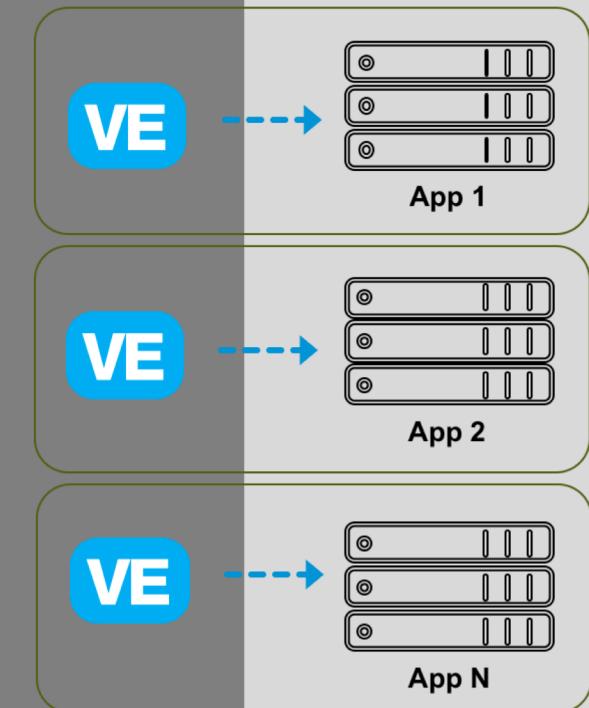
Key Facts

- Supports 1 VIP (3-Virtual Servers)
- Available Services:
 - BIG-IP LTM
 - BIG-IP ASM (Advanced WAF)
- 25M and 200M Instances
- BIG-IP v13.1.0.2 and later
- Pricing starting at only \$695 per App
(BYOL / Subscription / ELA)



Per-App VE

L7 Traffic Mgmt
and Security
(LTM, WAF)



Customers can now provide the best app services for all their apps

Introducing BIG-IP Cloud Edition

BIG-IP VE + BIG-IQ Solution Bundle

The screenshot displays the BIG-IQ Cloud Edition interface, featuring a navigation bar at the top with tabs for Monitoring, Configuration, Deployment, Devices, System, and Applications. The Applications tab is selected, showing a list of applications including Sample1, Sample2, and Sample3. Each application card provides a summary of its health (e.g., Critical, Not Protected), security (e.g., Bad Traffic, 0%), and performance metrics (e.g., App Response Time, Connections). A detailed view of Sample2 is shown on the right, highlighting app response time (0.23 ms), total connections (95.63), and protection mode (Transparent). The interface also includes sections for Application Performance, Client, Environment, and Servers, along with a timeline for HTTP Transaction Outcomes and Overlay events.

- Quick dashboard of applications
 - Drill down to specific app
 - App health, performance stats, and security status

RELATED RESOURCES

<https://www.ansible.com/integrations/networks/f5>

F5 OPEN SOURCE SPOTLIGHT BLOG

What's New for F5 in Ansible 2.5

[Read More](#)

ON DEMAND WEBINAR

WWT: BUILDING A F5 SOLUTION WITH ANSIBLE TOWER

[Watch Video](#)

ON DEMAND WEBINAR

Automating F5 BIG-IP Using Ansible

[Watch Video](#) [Read Webinar Q&A](#)

SOLUTION BRIEF

Automate your network with F5 and Ansible

[Download PDF](#)

WHITEPAPER

Automating the F5 BIG-IP Platform with Ansible

[Download PDF](#)

ON DEMAND WEBINAR

Automating Your Network with Ansible

[Watch Video](#)

F5 DEVCENTRAL BLOG

Getting started with Ansible

by Tim Rupp, Sr Software Engineer, F5

[Read More](#)

ON DEMAND WEBINAR

Fast Application Deployment and Customer Use Case with Ansible and F5 BIG-IP

[Watch Video](#) [Read Webinar Q&A](#)



QUICK LINKS

USE CASES

PRODUCTS

RESOURCES

RELATED SITES

Additional Resources

F5 Super-NetOps Training:

<https://f5.com/education/super-netops-training>

F5 Github Repositories:

<https://github.com/f5devcentral?utf8=%E2%9C%93&q=ansible&type=&language=>

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

F5 Ansible Getting Started:

<https://clouddocs.f5.com/products/orchestration/ansible/develop/>

Ansible Lightbulb Training Toolkit:

<https://github.com/ansible/lightbulb>

Bonus Lab with detailed info regarding BIG-IP Modules

<https://f5-architectures-with-ansible.readthedocs.io>

Why should You adopt DevOps

- Accelerate innovation by increasing the velocity of technology and application development and delivery
- Improve agility by integrating cross-functional teams that are better informed
- Encourage collaboration and shared ownership by developing an engaged and inclusive culture
- Increase effectiveness and efficiency by continuously learning and improving

Thank You

