Welcome to the Virtual Workshop!

Dynamic Service Automation

Presenters

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What enterprises are currently facing

Current Challenges

Slow Manual Processes

Ticketing systems are not allowing networks to move as fast as developers want

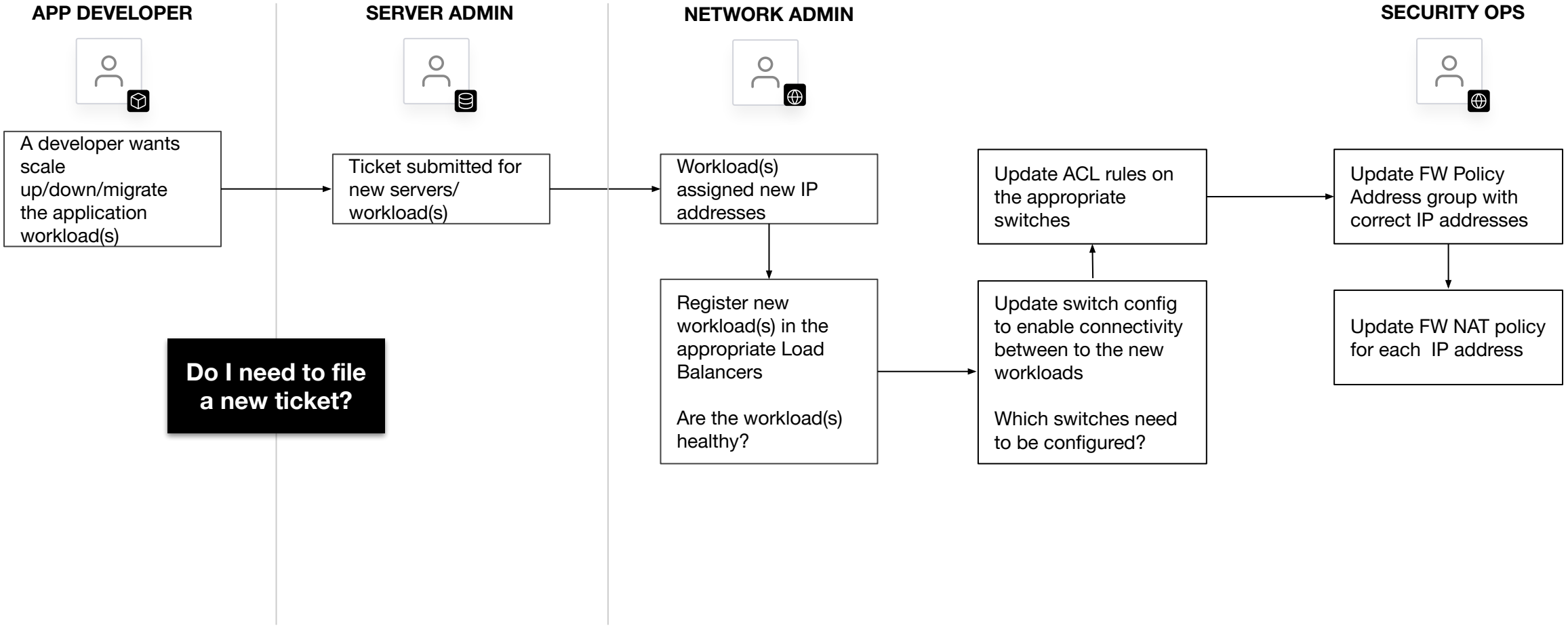
Increased Costs

Organizations want to find a way to optimize and increase efficiency with their existing and new networking infrastructure

Increased Risk

Higher risk network outage from misconfigurations across multiple networking infrastructure devices

Day-2 Application Scaling Workflow



Challenges for Adopting Automation

48%

Skill Gap

44%

Integration of Tool sets across vendors/devices

40%

Operational Model

How Modern Enterprises are tackling these challenges

Solving These Challenges

Automated Workflows

The shift to dynamic infrastructure has forced organizations to reconsider all aspects of their business, including the network. Rather than completely overhaul their existing implementations, organizations are looking to **automate key processes** that are preventing faster deployments.

Network Infrastructure Automation (NIA)

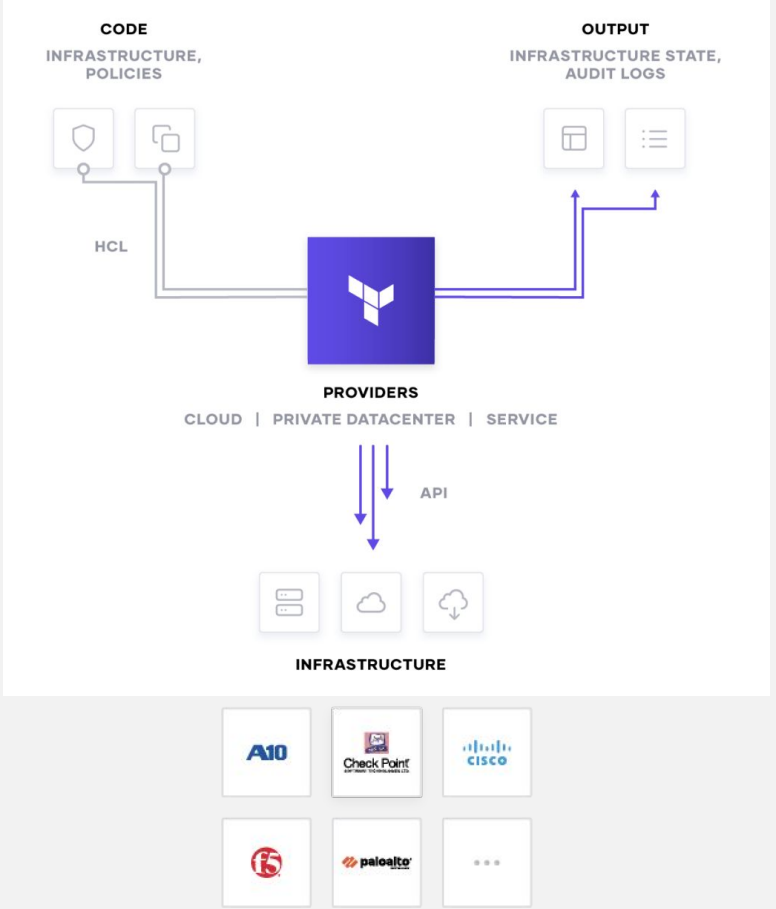
What is Dynamic Service Automation

- Dynamic service automation automates application service-related tasks such as **Networking** and **Security.**
- **Network Infrastructure Automation (NIA)** accelerates application delivery by automating networking related tasks
- NIA can be achieved through three methods:

1. **Terraform (Day 0/1)**
2. **Consul Terraform Sync (Day 2+)**
3. **Consul Networking Integrations (Day 2+)**

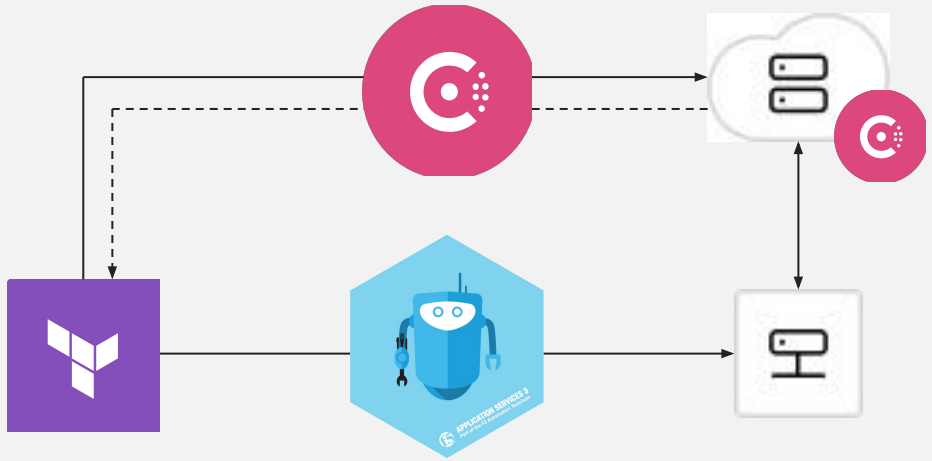
Use Case:
Terraform for NIA

- **Single, centralized workflow** for managing all infrastructure
- **Familiar, Infrastructure as Code** approach to networking
- Supports a **robust ecosystem**



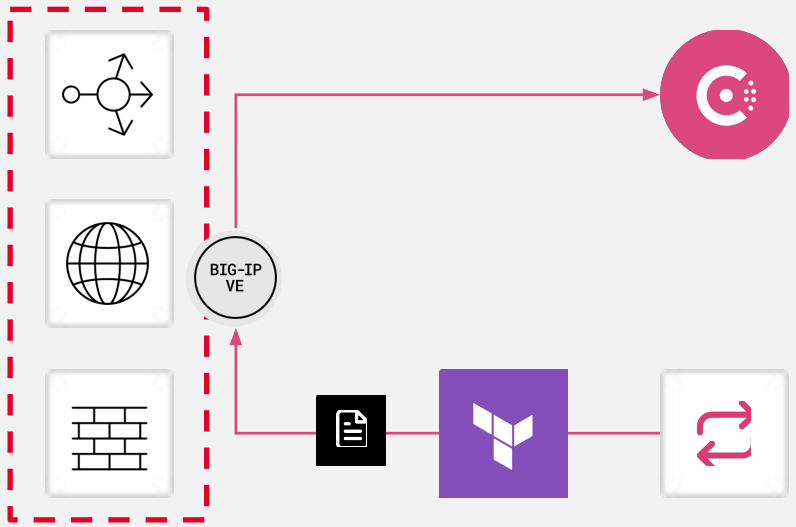
Use Case:
Consul Networking Integrations

- **Automate manual tasks** for existing solutions
- Native product **user experience**
- **Fewer changes** for operators

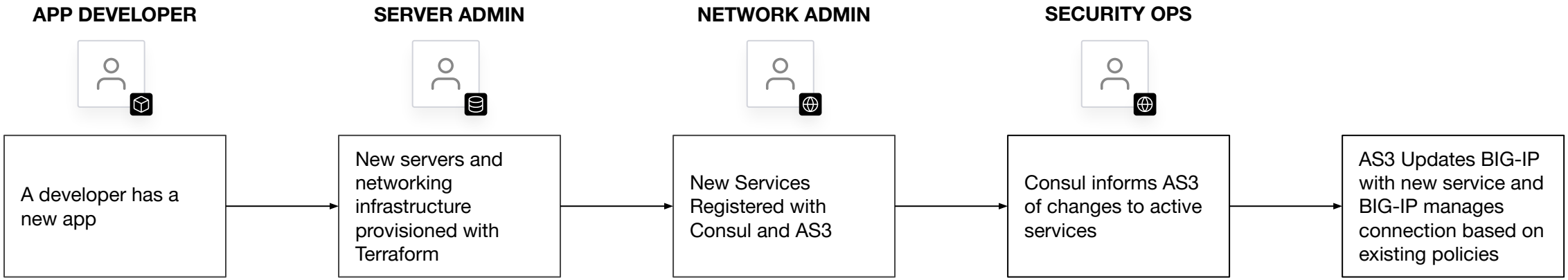


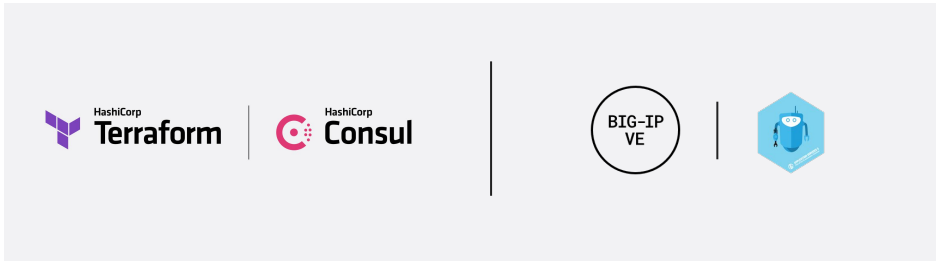
Use Case:
Consul Terraform Sync

- **Automate manual tasks** across multiple network devices
- **Lightweight installation**
- Built on a **robust ecosystem**



A New Day in the Life of Application Delivery





Automated workflow designed for scale.

F5 Event-Driven Service Discovery

F5 Automation Lifecycle

Bootstrap

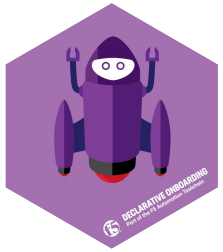
F5 BIG-IP IMAGE GENERATOR

Enables creation, customization and deployment of a BIG-IP disk image for a given private/public cloud.

Onboard

CLOUD SOLUTION TEMPLATES

Canonical examples using native templates for quickly deploying BIG-IP services on public cloud providers (AWS, Azure, Google)



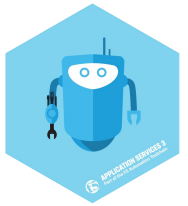
DECLARATIVE ONBOARDING EXTENSION

Initial Config of BIG-IP Instances

Cloud-Init
Handles early initialization of a cloud instance with user-data provided at instance launch time.

L1-L3

Deploy



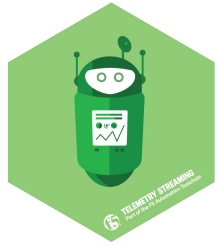
APP SERVICES 3 EXTENSION

F5 APP SERVICES TEMPLATES (FAST)

Deploy Classic and Advanced Application Services on BIG-IP using Declarative REST APIs

L4-L7

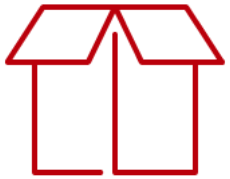
Monitor



TELEMETRY STREAMING EXTENSION

Stream Telemetry, Events & Logs from BIG-IP to various Analytics and Logging solutions

Change



F5 SDK

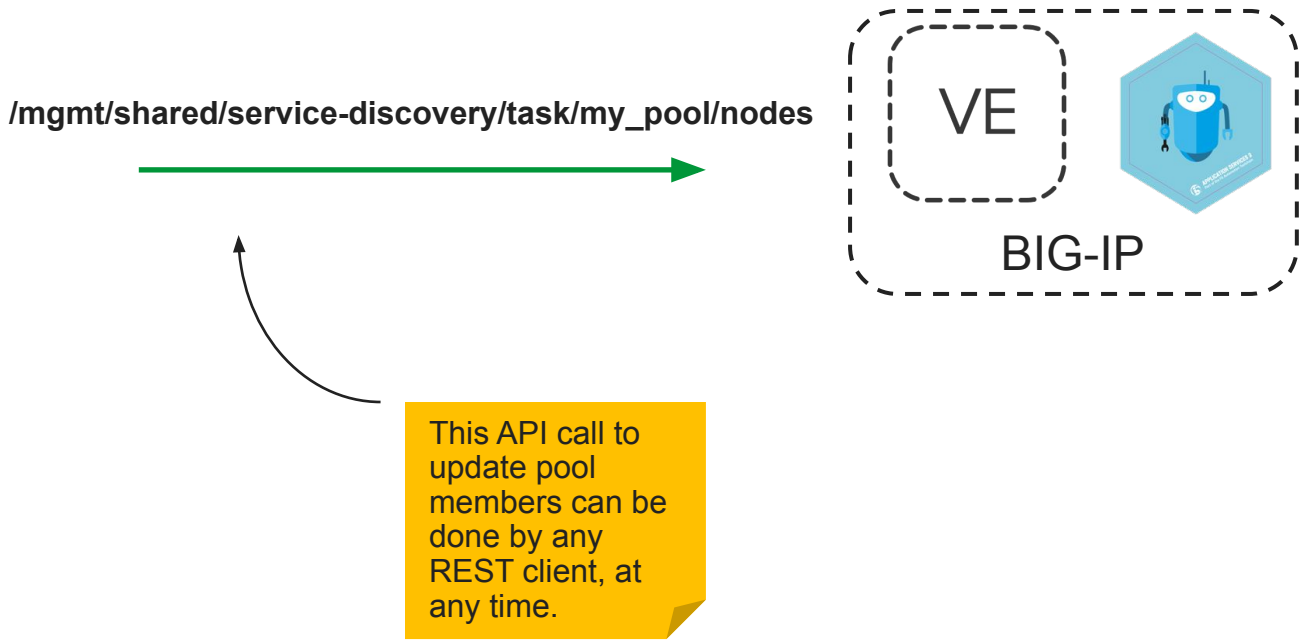
A set of tools, libraries, relevant documentation, code samples to help manage the ongoing configuration of F5 products and services.

Event-Driven Service Discovery

PUSHING CHANGES TO F5 BIG-IP

- Part of Application Services Extension (AS3)
- Create new API endpoint for updating BIG-IP “node” and “pool member” objects.

```
[{
  "id":"node1",
  "ip":"10.1.20.11",
  "port":80,
},
{
  "id":"node2",
  "ip":"10.1.20.12",
  "port":80
}]
```



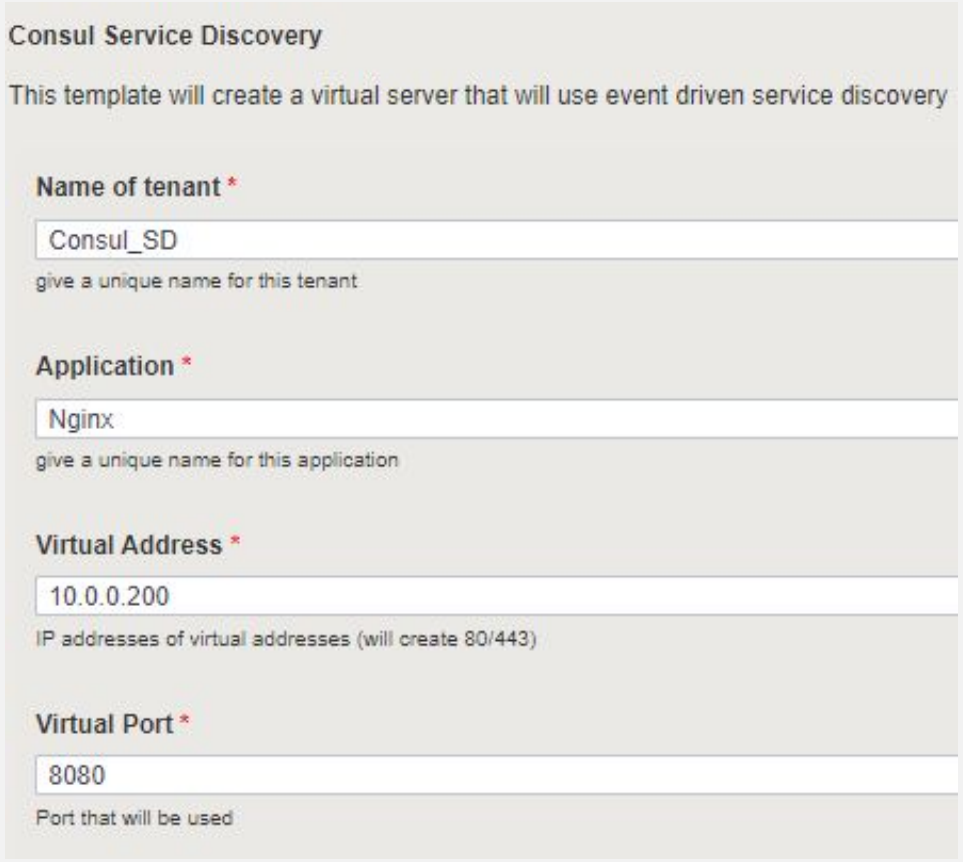
F5 Application Service Templates (FAST)

Making BIG changes SMALL

```
{
  “class”: ”AS3",
  ”action": ”deploy",
   ”persist": true,
   ”declaration": {
      ”class": ”ADC",
      ”schemaVersion": ”3.24.0",
      ”id": ”Consul_SD",
      ”Consul_SD": {
          ”class": ”Tenant",
          ”Nginx": {
          ”class": ”Application",
          ”template": ”http",
          ”serviceMain": {
               ”class": ”Service_HTTP",
               ”virtualPort": 8080,
               ”virtualAddresses": [
                        “10.0.0.200”
               ],
               ”pool": ”nginx_pool",
               ”persistenceMethods": [ ],
               ”profileMultiplex": {
                        ”bigip": ”/Common/oneconnect”
               }
          },
          ”nginx_pool": {
               ”class": ”Pool",
               ”monitors": [
                        “http”
               ],
               ”members": [
                 {
                        ”servicePort": 8080,
                        ”pool": ”nginx_pool”
                 }
           ]
               }
      }
}
```


F5 Application Service Templates (FAST)

Configuring consul service discovery via FAST GUI



F5 Application Service Templates (FAST)

Simplified Terraform Output

```
resource "bigip_fast_application" "nginx-webserver" {
  template        = "ConsulWebinar/ConsulWebinar"
  fast_json    = <<EOF
{
      "tenant": "Consul_SD",
      "app": "Nginx",
      "virtualAddress": "10.0.0.200",
      "virtualPort": 8080
}
EOF
```

Hands-on Lab

Login to UDF environment to begin hands-on lab

01

Access your AWS environment through UDF

02

Deploy BIG-IP & FAST Using Terraform

03

Enable Event-Driven Service Discovery with Consul Terraform Sync

https://learn.hashicorp.com/tutorials/consul/load-balancing-f5?in=consul/load-balancing

References

https://clouddocs.f5.com/products/extensions/f5-appsvcs-extension/latest/declarations/discovery.html

https://github.com/hashicorp/f5-terraform-consul-sd-webinar

Thank You

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