

## F5 integration with main Clouds, SDN, NFV platforms

Martin Oravec F5 System Engineer m.oravec@f5\_com +421 908 747633

### Services and Applications in the Hybrid Cloud F5 partnerships





## Public Clouds

#### © F5 Networks, Inc

4



Auto-scaling

**Public Cloud** 

**Integrating with the Big Four** 

- Multi-zone Failover
- WAF Security pre-

configured and fully

automated

■ BYOL

integration

BYOL Support

Container Support
 GSLB

Coming

Beta Participation

OpenStack integration

an IBM Company



SOFTLAYER







### **Public Cloud - marketplace**





### **Simplify Protection of Apps in Azure**



#### Integrated F5 WAF Solution For Azure Security Center



- Simple deployment experience integrated w/ Azure workflow and services
- Out-of-the-box choice of security settings preconfigured by F5 - fully deployed in less than 1 hour
- Comprehensive application security and compliance with advanced Layer 7 attack protections



Do you need a simple way to deploy app security and compliance solution with Azure?



Broadest set of app and security services in public cloud providers, including support for Microsoft Azure

## Automation & Orchestration

### Traditional way

- Imperative What we've done for years (design, HW install, networking, configs, scripting, ...)
- Imperative methodology implies that you define the flow of an operation implicitly. It also implies that domain-specific knowledge is required to interact with the system.



### **Orchestration / Automation**

 Declarative – What we're evolving to. Declarative methodology implies that you define the desired outcome and depend on underlying mechanisms to deliver that outcome. This methodology tries to reduce or eliminate the need for domain specific knowledge.



### F5 Management and Orchestration Strategy



iApp Catalogue Rest Proxy Enables programmatic management of many BIG-IPs

Single pane of glass BIG-IP management Supports LTM, APM, AFM, ASM. Secure Web Gateway & Fraud Prevention

### iWorkflow 2.0



### iWorkflow – Key Takeaways



- iWorkflow is for programmatic, automatic provisioning of network services
- iWorkflow has special "connectors" for integration into Cisco APIC and VMware NSX
- iWorkflow can be used through:
  - APIs
  - SDK
  - GUI which includes a "tenant" view for app teams can manage app services for just their applications
- Engage professional services or cloud specialists

# Cisco ACI Automation/Orchestration

### F5 and Cisco ACI Integration Models



### Adding Application Intelligence to Cisco APIC

#### iWorkflow dynamically creates device package based on iApps

#### **Business requirements**

• Want to be able to easily and programmatically manage application services in APIC

#### F5 Benefits

- Broadest range of L4-7 services
- Inject application intelligence into Cisco APIC with F5 iApp technology
- Dynamically generate APIC device packages
- Rich programmability including iRules callable by the APIC controller
- Flexible architectures with both physical and virtual ADCs



#### ACI + F5: F5 BIG-IP and iWorkflow

Use Cisco ACI iApp – dynamically generate device packages

## NSX Automation/Orchestration

### **NSX-v and F5 Service Insertion Architecture**



CONFIDENTIAL

### **NSX-v and F5 Integration Management Plane Components**



NSX Manager



vCenter Server

- Receives instructions from vCenter Web Client or other third-party management interface for orchestrating and managing BIG-IP VEs and application delivery services.
- Responsible for lifecycle management of BIG-IP VEs.
- Exchanges BIG-IP and application related orchestration, configuration, and status information with iWorkflow.
- Provides centralized management of vSphere-virtualized resources, including storage, networking, and virtual machines.
- Manages the virtualization platform where NSX-enabled BIG-IP VEs are deployed.

### NSX-v and F5 Integration Management & Control Plane Components



iWorkflow

- Provides management interface for ADC service provider-like functions, including BIG-IP server image repository configuration, integration with vCenter and NSX-v environments, application load balancing templates (iApps), etc.
- Facilitates the configuration and automated deployment of BIG-IP VEs with vCenter and NSX.

### **NSX-v and F5 Integration Data Plane Components**



**BIG-IP Virtual Edition** 

- Virtual machine that delivers native BIG-IP application delivery services to NSX-enabled environments.
- Deployed and managed using VMware NSX's service insertion capabilities.
- Options for standalone virtual machine or highavailability pair in an active/standby configuration.

# Openstack Automation/Orchestration



Really easy to deploy and maintain L4-L7 Network Services for Openstack: Infrastructure & Tenants

### **Openstack - Heat Architecture**



### LBaaSv1.0.10 Functionality Overview



**HA** Pair

**HA Pair** 

### Global Routed Mode For Edge Routed Networks – Multi-Tenant from L4-L7 Only

- Simplest form of deployment.
- BIG-IP reaches its loads balanced via pre-configured routing.
- Each tenant can create LBaaS services and provide VIPs and Pool Members.
- Designed for environments, typically, without overlays, such as VXLAN or GRE.



### Layer 2 Adjacent Mode BIG-IP with support for VLANs, GRE and VXLAN

- BIG-IP participates in the tenant VLAN or tunnel (using VXLAN or GRE).
- Automatic population with tunnel information when an LBaaS service is created for a tenant.
- Most typical use case for an SDDC.



### Simultaneous Support for Multiple LBaaS Services Dev, Test and Production services in distinct BIG-IP Clusters

- Administrator defines an ADC "service" and maps it to Virtual or Physical BIG-IPs.
- Examples
  - Development on Virtualized BIG-IP instances.
  - Test on BIG-IP appliances.
  - Production scale using VIPRION chassis.
  - Or perhaps, for an all virtual environment, they map to BIG-IP VE 2Gbps, 5Gbps and 10Gbps.



### Capacity-based Scale-out Capabilities Assign LBaaS services intelligently to BIG-IP clusters

- Administrator defines mappings of ADC services to pools of BIG-IP resources.
- Active Capacity the measured using administratively definable metrics
  - Throughput Total
  - Throughput (in)
  - Throughput (out)
  - Connections
  - Tenants
  - Nodes
  - Route Domains
  - VLANs
  - Tunnel count
  - SSL TPS
  - Profile Count
- Create customized loading formulas for specific needs

Intelligent load assignment supports Sticky assignments, such that normally a single tenant's pools will be on a common BIG-IP group, unless the limits in the policy are exceeded.

capacity policy =

throughput:10000000

active connections: 250000

route\_domain\_count: 512
tunnel count: 2048



### SDN vs VNF – Choosing the Right Tool for the Job

LBaaS deploys a load balancing network service

#### SDN - LBaaS

- Basic load balancing
- Vendor agnostic
- Minimal native feature set
- Least common denominator
- Multi-tenant aware





Application infrastructure

### **VNF** - Using orchestration APIs

Infrastructure and Application



DDoS Protection

- User defined behavior
- Flexible and Extensible
- Stackable
- Feature enablement
- Access to enhanced non-native LBaaS functionalities
- Multi-tenant aware



SSL VPN Security

Securing Exchange and SharePoint

Martin Oravec m.oravec@f5.com +421 908 747 633