



# Automate BIG-IP VE Deployments with F5's Next Generation Cloud Solution Templates

At the click of a button, automatically onboard and configure BIG-IP VEs while building out all the necessary cloud networking and infrastructure resources required for your application.



## KEY BENEFITS

### Reduced deployment time

Deploy complex solutions in minutes with F5® Cloud Solution Templates.

### Multi-cloud template parity

Templates for all cloud platforms improves flexibility and portability.

### Automation/orchestration of application services

Pair with third-party automation tools for autonomous application service configuration.

### Self-service for developers/app team

Empower developers to deploy at their own pace without security risks.

### Deployment confidence

Cloud Solution Templates are tested extensively to reduce the risk of human error.

### Free and open source

Templates are free to use and can be modified to suit your needs.

## The Challenge: Growing Need for Automation

It's no secret that cloud adoption continues to grow at an unprecedented rate as digital transformation accelerates within practically every industry. More and more applications are being migrated to the cloud while companies are simultaneously building innovative new apps designed to give them a competitive edge. Regardless of whether the cloud apps in question are migrated or net-new, they must all be kept secure, performant, and available, which means attaching a number of advanced application services during the cloud deployment process. From load balancing and SSL offload to web application security and access management, the process of spinning up and configuring these services is often complex and time consuming in today's multi-cloud world. This is only augmented by individual cloud providers offering disparate toolsets, applications having highly unique security and compliance requirements, and individual teams wielding different technical skillsets. When you add in the constant executive pressure to bolster security and optimize user experience while also lowering deployment times, you end up landing close to the perfect storm.

## The Solution: F5's Second Generation Cloud Solution Templates (CST2)

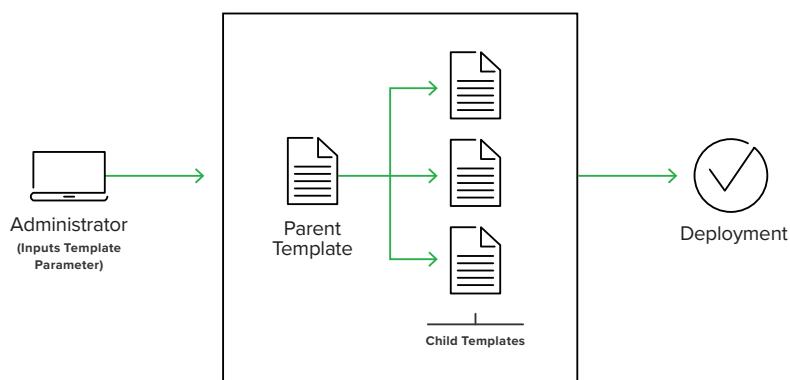
As with any new environment, selecting the most appropriate architecture, tooling, and operational requirements can be daunting. While F5 recommends standardizing on popular IaaS tools like Terraform, Ansible, Pulumi, etc., which have their own learning curves and some additional pre-requisites, F5's Cloud Solution Templates provide an alternative, tool-less deployment option for evaluating BIG-IP Virtual Edition instances and architectures. With minimal requirements and the click of button, users can deploy fully onboarded BIG-IPs configured with application services and complete with all the necessary cloud networking and infrastructure resources required for an application. By leveraging cloud native resource management services provided by cloud platforms, these Infrastructure-as-Code (IaC) templates enable the instantiation of BIG-IP VEs across various topologies in a matter of minutes. More specifically, these templates are:

- [AWS CloudFormation](#)—Templates for Amazon AWS
- [Azure Resource Manager](#)—Templates for Microsoft Azure
- [Google Deployment Manager](#)—Templates for Google Cloud

**Info for users of F5's 1st generation Cloud Solution Templates:** CST2 is the 2nd generation of F5's Cloud Solution Templates and will replace the first-generation templates in due course. In addition to adopting a new modular/nested architecture, CST2 also boasts a new run-time component for configuring BIG-IP that can be deployed by any orchestration tool (such as Ansible or Terraform) to provide an automated, touch-free way of installing and deploying the F5 Automation Toolchain at BIG-IP run time. The new verified CST2 templates will also enable greater customization and make it easier to find and test-drive full-stack BIG-IP VE deployments.

# How Do They Work?

Simply put, Cloud Solution Templates are declarations of the various cloud resources needed to make up an application stack. At the highest level there are two types of CST2 templates—*Parent* templates and *Child* templates—both of which are required for a successful deployment. In the same way that an Ansible *playbook* calls on various *plays* to execute an operation, *Parent* templates call on various *Child* templates to execute different aspects of a deployment. *Parent* templates are responsible for detailing the general deployment architecture that is desired, while *Child* templates provide the various resources required, including the cloud networking and infrastructure, ingress routing, IAM, security rules and BIG-IP configurations. Combined, the *Parent* template launches *Child* templates to create a full-stack and fully operational cloud environment. Below you will find summaries of the different *Parent* and *Child* templates available:



**Figure 1:** Conceptual Cloud Solution Template flow.

## PARENT TEMPLATES: DEFINE YOUR PREFERRED BIG-IP VE ARCHITECTURE

The following BIG-IP VE topologies are available:

- **Quickstart**—The Parent template deploys a standalone BIG-IP VE instance with LTM and WAF enabled and provisioned via F5’s Automation Tool Chain. This solution provides a quick login to a fully configured BIG-IP capable of passing traffic and intended for first-time users or those who want to test-drive or explore a working BIG-IP deployment.
- **Failover (Coming soon)**—The Failover Parent template deploys two or more BIG-IP VE instances in a traditional Active/Standby HA configuration, whereby, in the event of an instance failover, traffic will be redirected to the standby BIG-IP VE by remapping IP addresses and other routing information. This solution is intended for test-driving the most common deployment topology for BIG-IP VE’s in production environment, as it provides increased redundancy and application uptime.

- **Autoscaling**—The Autoscaling template leverages cloud native scaling services (AWS Auto Scaling Groups, Azure Scales Sets, etc.) to automatically provision or retract BIG-IP VE instances as usage fluctuates based on pre-defined traffic thresholds. This architecture is often used with highly dynamic environments where application usage can vary greatly during different time periods. Unlike previous solutions, CST2 leverages the more traditional autoscale configuration management pattern where each instance is created with an identical configuration and managed exclusively via the Autoscaler's model.
- Scaling is also no longer restricted to the smaller limitations of BIG-IP's clustering (DSC).

**Figure 2:** Availability of Parent Templates for each major cloud environment.

|                     | QUICKSTART | FAILOVER    | AUTOSCALING |
|---------------------|------------|-------------|-------------|
| <b>AWS</b>          | ∅          | Coming soon | ∅           |
| <b>Azure</b>        | ∅          | Coming soon | ∅           |
| <b>Google Cloud</b> | ∅          | Coming soon | ∅           |

In addition to outlining the BIG-IP VE architecture, Parent Templates also define the preferred licensing model for those VEs. Depending on your consumption model, the BIG-IP VEs deployed by these Parent Templates can be licensed in one of three ways:

- **BYOL**—Input your Bring-Your-Own-License (BYOL) license keys manually.
- **PAYG**—Use Pay-As-You-Go (PAYG) instances, which are self-licensing.
- **BIG-IQ**—Leverage BIG-IQ to automatically license instances with your BYOL registration keys.

## CHILD TEMPLATES: DEFINE ALL OTHER ASPECTS OF YOUR DEPLOYMENT

The following Child Templates can be linked within the chosen Parent Template to specify other deployment requirements:

- **Network Template**—The Network Template is responsible for creating the cloud environment in which your deployment will be housed, including both the virtual network and any subnets required.
- **Application Template**—The Application Template is used to deploy an example application used for demonstrating live traffic. The template takes a container name as input and deploys on a single instance or autoscale group depending on the solution.
- **Access Template**—The Access Template creates identity and access related resources (for example, Azure Managed Identities, AWS IAM roles, GCP's service accounts) required for advanced solutions. This template enables easy secrets management (using Azure Key Vault, AWS KMS, GCP Secret Manager, or similar) as well as implementation of any special permissions needed for solutions like failover, service discovery, telemetry, and others.

- **Dag/Ingress Template**—The Dag/Ingress Template creates any additional cloud resources that may be needed to route traffic to the BIG-IP VE. This could include Public IPs, cloud-native load balancers and security groups.
- **BIG-IP Template**—These BIG-IP templates are responsible for deploying the BIG-IP VE instance(s) in the desired topology within your cloud environment. It also leverages a deployment tool called BIG-IP Runtime Init which uses a number of inputs including Automation Toolchain declarations and application secrets to boot and automatically configure the BIG-IP VE instance(s).

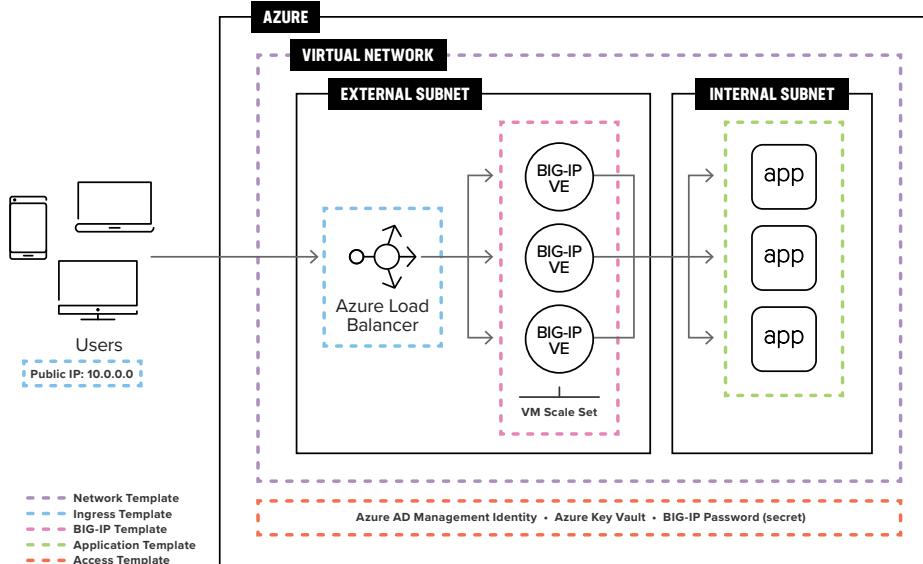
## EXAMPLE DEPLOYMENT: BRINGING IT ALL TOGETHER

Consider a scenario where a company is migrating their apps to Microsoft Azure to improve scalability. To achieve this, the operations teams and cloud architects have outlined an agreed upon architecture which consists of a virtual network containing two subnets (one external and one internal):

- The external subnet contains an Azure Load Balancer with a public IP address. This, in turn, is distributing traffic to autoscaling BIG-IP VEs that are fully configured and operational within a VM Scale Set and pass traffic to the applications.
- The internal subnet houses these applications

They also wish to use Azure AD for Managed Identity to seamlessly deliver the BIG-IP password as a secret to the BIG-IP VEs once spun up. After choosing the appropriate Parent template (Autoscaling), the diagram below highlights which of the subsequent Child Templates would execute each component of the desired deployment using parameters provided by the template admin.

**Figure 3:** Architectural view of an example Autoscaling Template deployment.



Cloud architects would take days to build this relatively complex set-up from the ground up, but by leveraging these templates the solution could be implemented, operational, and test-driven in less than 20 minutes.

## Benefits of Cloud Solution Templates

- **Reduced deployment time**—Agility in the cloud is crucial to enhancing business performance. Complex cloud solutions that could take days or weeks to configure manually can be deployed in minutes using these templates. Even experienced cloud architects can use these templates to reduce solution implementation time by up to 80%, enabling precious working hours to be re-allocated to more pressing business matters.
- **Automation/orchestration of application services**—As cloud architectures evolve and become more multifaceted, there is increased need for orchestration and automation to support faster, more reliable operations. When integrated with 3rd party automation tools such as Terraform and Ansible, F5's Cloud Solution Templates can be leveraged to enable fully orchestrated, end-to-end workflows, allowing F5 services to be autonomously spun-up and configured without the need for human interjection.
- **Deployment confidence**—F5's Cloud Solution Templates provide tested/validated examples to help test-drive BIG-IP in common deployments. They can serve as a valuable working baseline from which you can customize to meet your organization's particular needs.
- **Multi-cloud template parity**—Intense competition between cloud vendors is triggering price wars and fast-paced evolution of cloud native services. For this reason, many businesses are reluctant to commit entirely to one cloud platform, giving them flexibility to pursue a better deal or new innovative service. F5 offers near-identical Cloud Solution Templates for each major cloud provider, allowing for fast, automated replication of deployments across cloud platforms.
- **Self-service for developers/app teams**—Operations teams are sometimes viewed as the bottleneck in the deployment process by developers as they wait for necessary application services to be built and configured. F5's Cloud Solution Templates allow operations teams to enable developers to deploy their own application services by filling out the appropriate template. This empowers developers to deploy at their own pace while staying within the security and compliance guidelines outlined by operations teams.
- **Free and open source**—All of the templates F5 provides are completely free and available to everybody. These templates are also open source, so users can modify them as needed to meet their individual requirements.

ALL F5 CLOUD SOLUTION  
TEMPLATES CAN BE USED  
IN CONJUNCTION WITH  
F5'S VIRTUAL EDITION  
FREE TRIAL LICENSES.  
IT'S NEVER BEEN EASIER  
TO BECOME FAMILIAR  
WITH THE WORLD'S  
MOST TRUSTED SET OF  
APPLICATION SERVICES.

## Conclusion

The process of manually deploying and configuring application services can be daunting, time consuming, and prone to human error, making it unsustainable when driving towards fully automated cloud environments. With F5's Cloud Solution Templates, F5's application services can be spun-up across a variety of cloud platforms automatically and in a fraction of the time. Designed and fully tested by F5 engineers, these templates enable anyone to deploy their application services with absolute confidence, whether they are relatively inexperienced or BIG-IP superusers.

All F5 Cloud Solution Templates can be used in conjunction with F5's Virtual Edition [free trial](#) licenses. It has never been easier to become familiar with the world's most trusted set of application services.

## More Information

For more information about how F5 Cloud Solution Templates can help your business, please visit these resources:

### 2nd Generation Cloud Solution Templates (CST2):

[F5 GitHub—CloudFormation Templates for AWS \(CST2\)](#)

[F5 GitHub—Azure Resource Manager Templates for Microsoft Azure \(CST2\)](#)

[F5 GitHub—Google Deployment Manager Templates for Google Cloud \(CST2\)](#)

### Legacy Cloud Solution Templates:

[F5 GitHub—CloudFormation Templates for AWS \(Legacy\)](#)

[F5 GitHub—Azure Resource Manager Templates for Microsoft Azure \(Legacy\)](#)

[F5 GitHub—Google Deployment Manager Templates for Google Cloud \(Legacy\)](#)

