F5 BIG-IP Device Package for Cisco APIC Quick Start Guide

Welcome to the Cisco® Application Policy Infrastructure Controller (APIC) and F5® BIG-IP® Device Package for Cisco APIC Quick Start Guide. The goal of this guide is to describe the necessary steps to configure a basic L7 server load balancing service on the BIG-IP system using APIC and the F5 BIG-IP Device Package for Cisco APIC to enable you to rapidly integrate the BIG-IP system with Cisco APIC.

This document focuses on the sequence of configuration, not the specific configuration details. The step-by-step configuration details are contained in the F5 APIC Device Package User's and Troubleshooting Guide at
http://www.f5.com/pdf/deployment-guides/f5-cisco-apic-dg.pdf

Products and applicable versions

Product	Versions
F5 BIG-IP Device Package for Cisco APIC	1.0.0(78)
BIG-IP system	11.4.1 or later
Cisco APIC	APIC version 1.0(1e), Switch version 11.0(1b)

Related Documentation

The following documentation may serve as additional reference.

F5 documentation

- For known issues and information for a specific release of the F5 BIG-IP Device Package for Cisco APIC, refer to the F5 BIG-IP Device Package for Cisco APIC Release Notes for the applicable version of the device package.
- For detailed information on the F5 BIG-IP Device Package for Cisco APIC, refer to the ***F5 BIG-IP Device Package for Cisco APIC User and Troubleshooting Guide***

Cisco documentation

- For an overview of APIC, refer to the ***Cisco APIC Getting Started Guide***.
- For details on how to configure Layer 4 to Layer 7 services on APIC, refer to the ***Cisco APIC Layer 4 to Layer 7 Services Deployment Guide***.
- Cisco also provides several other documents for APIC, refer to your Cisco APIC documentation set for additional details.

To provide feedback on this deployment guide or other F5 solution documents, contact us at *solutionsfeedback@f5.com*.

Integrating the BIG-IP system with Cisco APIC

F5 integrates with Cisco APIC using a Device Package. The F5 BIG-IP Device Package for Cisco APIC is available for download from F5 as a ZIP file and then is imported into APIC (as described in this document). The file contains the following:

- A device model, which describes the features and functions available to APIC on the BIG-IP system.
- A device script, which implements the features and functions described by the device model.

APIC is built with a standard application programming interface (API) used to configure services implemented by integrated vendor devices, such as F5. The F5 BIG-IP Device Package for Cisco APIC implements the API specific to the semantics of the BIG-IP system.

The following diagram illustrates the logical flow between Cisco APIC and the BIG-IP system.

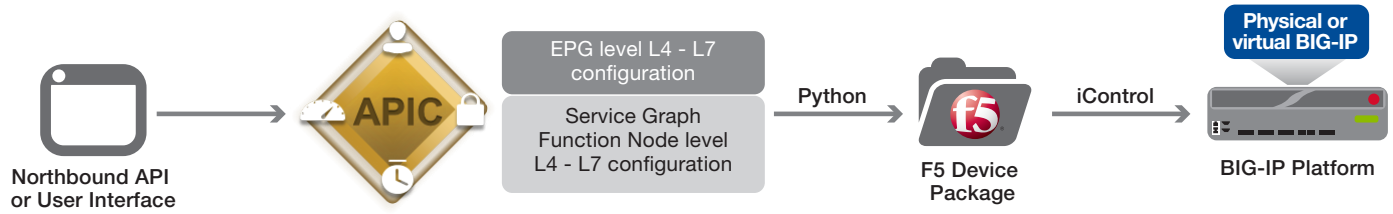

Figure 1: *Logical configuration example*

An administrator uses the northbound API or the user interface on APIC for configuration. Service graphs created with the F5 BIG-IP Device Package for Cisco APIC cause APIC to call the F5 BIG-IP Device Package for Cisco APIC to push configuration to the BIG-IP system, ascertain health, and obtain statistics (interface counters). The APIC API for L4 - L7 services is implemented by the F5 device script. The device script translates the standard APIC API calls into BIG-IP system specific iControl/SOAP calls to implement the service. Status and state information, returned from the iControl/SOAP calls to the BIG-IP system, is translated by the F5 BIG-IP Device Package for Cisco APIC and returned to APIC for processing.

F5 and Cisco ACI Fabric Integration Overview

The following diagram shows a typical network topology with the BIG-IP system integrated with Cisco ACI.

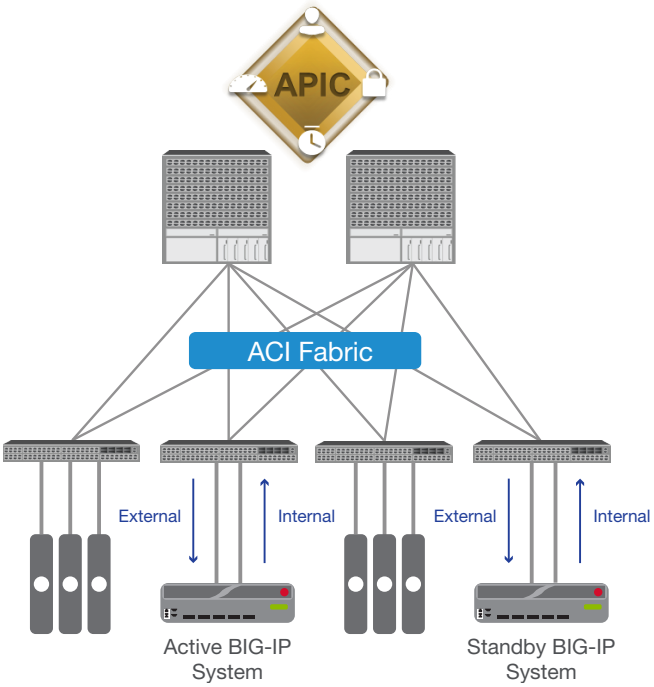

Figure 2: *Network topology example*

The internal and external interfaces on the BIG-IP system are connected to leaf nodes in the ACI architecture. Items such as web servers, database engines, and application tiers are also connected to leaf nodes. Spine nodes handle the routing between the BIG-IP system and the various other end points necessary to deliver an application service.

The management port of the BIG-IP system is connected out-of-band to a switch outside of the ACI architecture (not shown in the diagram) to provide management access.

This diagram is not meant to illustrate all possible architectures but rather communicate a typical architecture showing where the BIG-IP system fits into the Cisco ACI architecture.

BIG-IP Configuration Support in Cisco APIC

For the initial release of the F5 BIG-IP Device Package for Cisco APIC, the following configuration functionality is supported through Cisco APIC for BIG-IP devices:

- Configuration of L4 - L7 services, such as HTTP load balancing.
- Configuration of Microsoft SharePoint services.

BIG-IP system functionality not listed is not supported in the current version of the software, such as using modules like Access Policy Manager (APM), Application Security Manger (ASM) and Global Traffic Manager (GTM). Richer, broader configuration capabilities may be available in future versions of the F5 BIG-IP Device Package for Cisco APIC.

Selecting BIG-IP systems to be used with Cisco APIC

When choosing BIG-IP devices to integrate with Cisco APIC, F5 recommends using dedicated device(s), and not using a BIG-IP system that is already being used (or will be used) for another purpose. This is mainly due to the fact that parts of this configuration are managed by Cisco APIC, and out-of-band changes to the BIG-IP system for another purpose could affect operation with Cisco APIC.

F5 may revisit this limitation in a future version of the F5 BIG-IP Device Package for Cisco APIC.

BIG-IP and Cisco APIC Integration Details

Using Cisco APIC, a customer can configure Tenants, Device Clusters containing one or two BIG-IP devices, and Service Graphs. When a Service Graph is pushed to the BIG-IP system, the F5 BIG-IP Device Package for Cisco APIC running on Cisco APIC uses iControl/SOAP calls to configure all aspects of the supported service.

Each Tenant is assigned a unique partition on the BIG-IP system, in the form of **apic_XXXX**, where XXXX is the Tenant ID. Similarly, each Tenant is assigned a random route domain ID. After successfully deploying a Service Graph on the BIG-IP system, you can log into the BIG-IP system to view the configuration.

Cisco APIC uses a single admin-level userid and password to configure the BIG-IP system on behalf of all Tenants. Tenants are not expected to log into the BIG-IP system to diagnose issues – that is the duty of the admin provider.

Migrating services on a BIG-IP system not managed by Cisco APIC

You may want to migrate services configured on the BIG-IP system directly, or on the BIG-IP system using other management systems to Cisco APIC. Refer to the ***F5 BIG-IP Device Package for Cisco APIC User and Troubleshooting Guide*** for details on this configuration.

Quick Start table

The following table lists the minimum steps necessary to deploy a Service Graph to the BIG-IP using Cisco APIC.

Important

*This guide is not meant to be a replacement for the **F5 Device Package User and Troubleshooting Guide** which contains comprehensive instructions and guidance for configuring the F5 Device Package and Cisco APIC, and goes into detail on each of the steps in this Quick Start guide. If you are not familiar with this solution, we strongly recommend you read that guide first.*

*We also recommend you are familiar with the **Cisco APIC Layer 4 to Layer 7 Services Deployment Guide**, which provides instructions on the Cisco APIC configuration.*

Step	Details
1	**Task**: Review the product release notes. The release notes communicate late-breaking information, known issues, and additional important details not contained in the documentation. **References**: For the F5 BIG-IP Device Package for Cisco APIC, refer to F5 BIG-IP Device Package for Cisco APIC Release Notes downloaded with the device package. For Cisco APIC, refer to the Cisco Application Centric Infrastructure Release Notes.
2	**Task**: Verify your environment meets the prerequisites necessary for the successful deployment of a Service Graph to the BIG-IP system using APIC. This includes: 1. Software version requirements 2. Hardware requirements 3. VMware requirements (if you plan to use BIG-IP virtual edition) 4. APIC configuration requirements 5. BIG-IP system requirements **References**: The F5 BIG-IP Device Package for Cisco APIC User and Troubleshooting Guide describes all the necessary prerequisites.
3	**Task**: Download the F5 BIG-IP Device Package for Cisco APIC from F5. 1. Log into *https://downloads.f5.com* (register for a free account if necessary) 2. Locate the **Third-Party-Software** folder, click **Cisco APIC**. 3. Select your version (v11.4.1 or later for this implementation), and then read and accept the EULA. 4. Locate the **F5-BIG-IP-Device-Package-for-Cisco-APIC.zip**. 5. Download and save the F5 BIG-IP Device Package for Cisco APIC to a location accessible from Cisco APIC.
4	**Task** Import and validate the F5 BIG-IP Device Package for Cisco APIC on your APIC configuration. 1. Log into Cisco APIC. 2. From the top-level menu bar, click **L4-L7 SERVICES**, and the click **PACKAGES** from the sub-menu. 3. In the right pane, click **Import a Device Package**. 4. Click **BROWSE** and then navigate to the location where you saved the F5 BIG-IP Device Package for Cisco APIC. 5. Click **SUBMIT** to upload the device package. 6. Verify the device package has been accepted by APIC by clicking **L4-L7 Service Device Types** in the left pane.

Step	Details
5	**Task**: Create a BIG-IP Device Cluster in APIC. The Device Cluster on APIC is associated with the F5 BIG-IP Device Package for Cisco APIC and later your Service Graph. If the Device Cluster is to be shared between multiple Tenants, create the it in the pre-configured **mgmt** APIC Tenant. Otherwise, create it in the target Tenant. 1. From the top-level menu bar, click **Tenants**, and the click the target Tenant from the sub-menu. 2. In the left pane, expand **L4-L7 Services**, and then **Device Clusters**. 3. Right-click **Device Clusters** and then select **Create Device Cluster**. 4. Specify the details requested by APIC. 5. Specify the Internal and external logical interfaces, and then click **NEXT**. 6. Add your BIG-IP devices as Concrete Devices. You can add one or two. The ***F5 BIG-IP Device Package for Cisco APIC User and Troubleshooting Guide*** contains specific requirements to ensure proper mapping of APIC-named interfaces to the actual interfaces on the BIG-IP system. 7. Click **NEXT**, and then click **OK**.
6	**Task**: If you plan to share BIG-IP devices with multiple Tenants, export the Device Cluster created in Step 5 to a Tenant. If the Device Cluster is to be used by a single tenant only, you can skip this step. 1. Open the Tenant where you created the Device Cluster. 2. Open L4-L7 Services. 3. Open Device Clusters. 4. From the **ACTIONS** list, click **Export Device Cluster**. 5. Choose the Tenant and Device Cluster.
7	**Task:** Create an L4-L7 Service Graph using the F5 Device Cluster. 1. Open the **Tenant** folder. 2. Open the **L4-L7 Services** folder. 3. Right-click **Service Graphs**, and then click **Create L4-L7 Service Graph**. 4. Drag and drop the function from the F5-BIG-IP device package to the right pane. 5. Connect the **Consumer** and **Provider** EPGs to the BIG-IP function in the middle. 6. Click **SUBMIT**.
8	**Task:** Configure the Service Graph's parameters, for example, virtual server IP address, pool members, monitors, and self IP addresses. 1. Continuing from the previous Step, open your **Service Graph** folder, and then click the **Function Node**. 2. Edit the parameter values in the **Device Config** section. 3. Edit the parameters in the **Function Config** section.
9	**Task:** Configure the device cluster selection policy. This is used to direct service graphs to specific BIG-IP clusters. For example, you may wish to run high bandwidth, mission critical applications on BIG-IP appliances, and best-effort applications on BIG-IP virtual editions. 1. Open the **Tenant** folder 2. Open the **L4-L7 Services** folder 3. Right click the **Device Cluster Selection Policies** and then click **Create Logical Device Context**. 4. Specify the configuration. 5. Click **SUBMIT** to save.

Step	Details
10	**Task:** Attach the Service Graph to a contract; this causes the configuration to be pushed to the BIG-IP devices configured for the Tenant. 1. Open the **Tenant** folder. 2. Open the **Security Policies** folder. 3. Open the **Contracts** folder. 4. Open the Contract to which you want to assign the Service Graph. 5. Assign the **Service Graph**. 6. Click **SUBMIT**.
11	**Task**: Validating deployment of a Service Graph to the BIG-IP system. 1. From the top-level menu, click **Tenants**. 2. Click your Tenant. 3. Open the **Tenant** folder. 4. Open the **L4-L7 Services** folder. 5. Click **Deployed Service Graphs** folder 6. If the state is **applied**, the graph has been deployed to the BIG-IP system. If the state is **failed-to-deploy**, the graph did not deploy. 7. You can check your BIG-IP system to validate the configuration. APIC deploys the configuration for each Tenant in an **apic_XXXX** partition, where **XXXX** is a Tenant ID number.
12	**Task**: Modify the Service Graph's parameters. For example, adding a pool member, changing a monitor's properties, and so on. The procedure is the same as Step 8.

Contacting F5 Support

If you encounter an issue with the F5 BIG-IP Device Package for Cisco APIC, *first* see the ***F5 BIG-IP Device Package for Cisco APIC User and Troubleshooting Guide*** for detailed information. If you still have an issue, technical support is provided through the same support channel and methods you currently use for F5. Have your BIG-IP system's registration key ready prior to initiating a support call with F5.

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