

API Management

API Gateway Full Healthcheck Policies

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1. Healthcheck APIGW 7.5.3 Architecture

This topic describes how to perform a full components healthcheck plus a zero downtime policy deployment to API Gateway in a multi-node API Gateway environment with a load balancer.

Note: The section **Create Cassandra HC Policy** is an improvement of the **Healthcheck LB Service**, and the reason is to validate, at the same time, **API Gateway**, **API Manager** and **Cassandra**. It is highly recommended.

Note2: This specification is designed for **Axway API Gateway 7.5.3** or newer

Source:

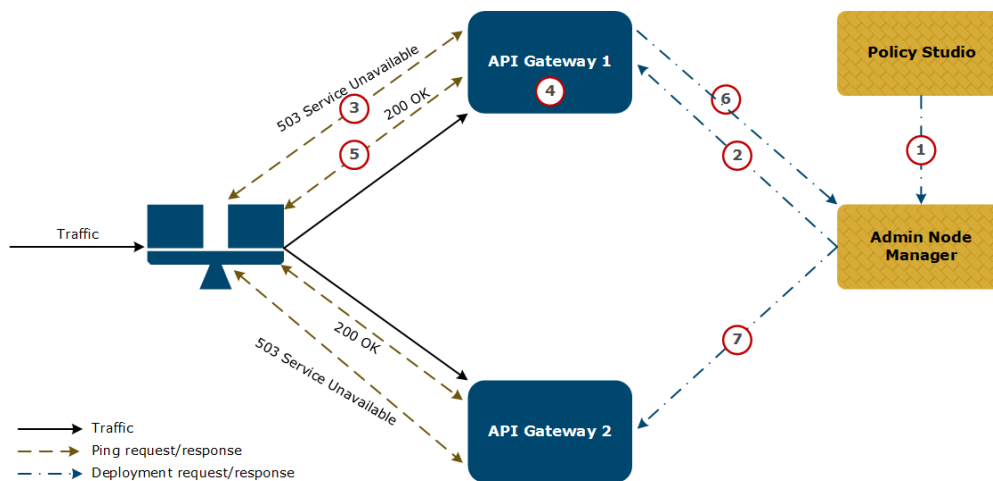
https://docs.axway.com/bundle/APIGateway_753_AdministratorGuide_allOS_en_HTML5/page/Content/AdminGuideTopics/admin_zdd.htm

2. Introduction to Zero Downtime Deploy

When you deploy configuration (for example, a .fed file) to a group of API Gateways, the configuration is deployed sequentially to each API Gateway in the group. While the configuration is being deployed to a given API Gateway there is a service interruption during which that API Gateway cannot process traffic.

Zero downtime deployment enables you to orchestrate deployment to a load-balanced set of API Gateways, ensuring that a subset can always process traffic.

The following diagram illustrates the process:



1. A user initiates deployment of new configuration from Policy Studio.
2. The Admin Node Manager starts deployment in API Gateway 1.
3. API Gateway 1 starts responding to a ping from the load balancer with 503 Service Unavailable. The load balancer stops routing traffic to API Gateway 1.
4. API Gateway 1 performs the deployment.
5. API Gateway 1 starts responding to the load balancer ping with 200 OK. The load balancer starts routing traffic to API Gateway 1 again.
6. API Gateway 1 informs the Admin Node Manager that deployment is complete.
7. The Admin Node Manager repeats step 2 through step 6 for API Gateway 2.

3. Introduction to Virtualized Healthcheck

The purpose is to provide a full healthcheck solution to verify in one way, the API Gateway service (8443), API Manager Traffic Service (8065) and Cassandra Health.

The method is to expose a policy by a relative path and virtualize it on API Manager. The Load Balancer must use this virtualized API to healthcheck.

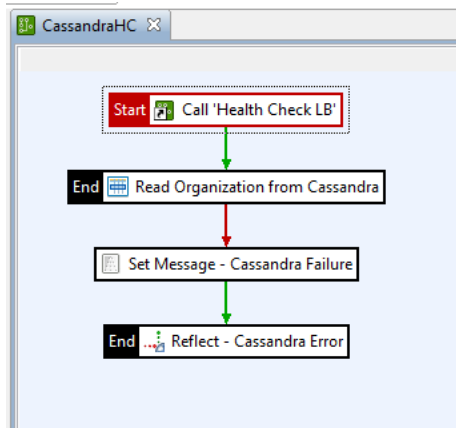
The policy does an explicit “SELECT” to Cassandra by reading the Community organization from API Portal collection.

- If return True, follow by the default HealthcheckLB validation
- If it can't be reached there is an issue with Cassandra, and the healthcheck fail.

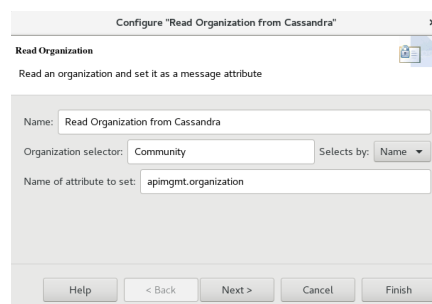
4. Create the CassandraHC Policy

Create a policy to enhance the HealthcheckLB policy to validate Cassandra health.

Create a new policy CassandraHC and organize the filters as the image below.



Edit the “Read Organization” filter to search the Community organization from API Portal.



Configure "Read Organization from Cassandra"

Read Organization

Read an organization and set it as a message attribute

Name: Read Organization from Cassandra

Organization selector: Community Selects by: Name

Name of attribute to set: apimgmt.organization

Help < Back Next > Cancel Finish

Edit the “Set Message” filter to create the Cassandra error message.

The screenshot shows a dialog box titled "Configure 'Set Message - Cassandra Failure'". It has a tab labeled "Set the Message". Below the tab, it says "Change the contents of the message body." The "Name" field is "Set Message - Cassandra Failure". The "Content-Type" field is "text/xml". The "Message Body" field contains the XML snippet: `<status>Cassandra failed</status>`. There is a "Populate" button next to the message body field. At the bottom, there are buttons for "Help", "< Back", "Next >", "Cancel", and "Finish".

Edit the “Reflect Message” filter

The screenshot shows a dialog box titled "Configure 'Reflect - Cassandra Error'". It has a tab labeled "Reflect Message". Below the tab, it says "Return the current message to the client". The "Name" field is "Reflect - Cassandra Error". The "HTTP response code status" field is "500". At the bottom, there are buttons for "Help", "< Back", "Next >", "Cancel", and "Finish".

Create a Policy shortcut to HealthcheckLB.

The screenshot shows a dialog box titled "Configure 'Call Health Check LB'". It has a tab labeled "Policy Shortcut Filter". Below the tab, it says "Select the Policy to create a shortcut to". The "Name" field is "Call Health Check LB". The "Policy Shortcut" field is empty. Below the "Policy Shortcut" field, there is a list of policies. The "Health Check LB" policy is selected. At the bottom, there are buttons for "Help", "< Back", "Next >", "Cancel", and "Finish".

Create a relative path to expose the policy.

Resolve path to Policies

☒ Enable this path resolver

Policies | Logging Settings | HTTP Method | Advanced | CORS

When a request arrives that matches the path:

Call the following Policies:

☐ Global Request Policy

☒ Path Specific Policy:

☐ Global Response Policy

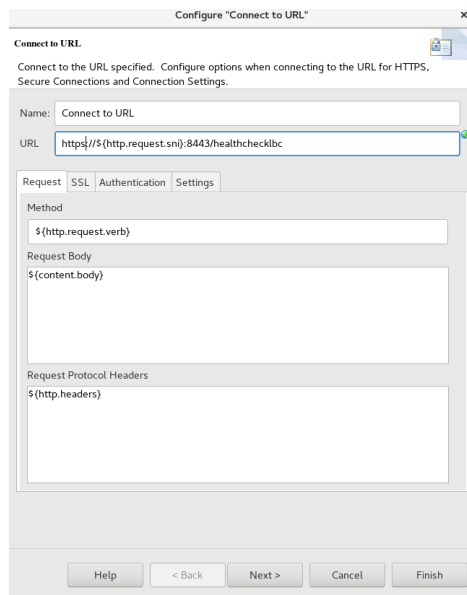
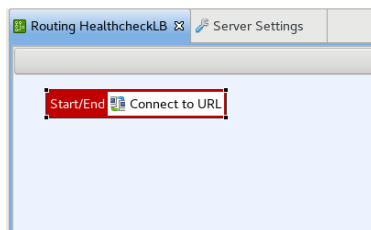
Cancel Help OK

Deploy the configuration

5. Create the Routing Policy

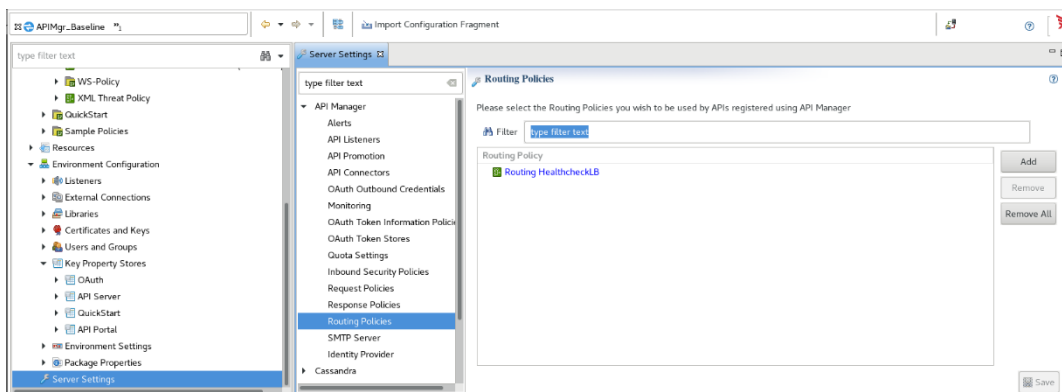
The healthcheck must be fully executed into the same host. This policy ensures that each APIMGR always connect to its own APIGW. The variable `${http.request.sn1}` has the hostname of the APIGW server processing the current transaction.

On Policy Studio, create the policy “Routing HealthcheckLB”



Set the policy to API Manager Routing policies

Policy Studio > Server Settings > API Manager > Routing Policies



Deploy the configuration

6. Virtualize the API

Register Backend API

Create the API definitions and its Method, following the configurations below.

Note: In a HA architecture, can be used any host as Basepath URL. A policy will be used to route the traffic and ensure that the incoming API MGR request reach the same APIGW Server. (See 5 - Create the Routing Policy)

Axway API Manager

Welcome apiadmin

API

Frontend API

Backend API

API Catalog

Editing API, HealthcheckLB

Editing API. Make your changes and click "Save" to commit them, or "Cancel" to quit.

Save Apply Cancel

Editing API

API API Methods Models

General

*API name: HealthcheckLB

*Service type: REST

*Organization: API Development

*Base path URL: https://apimgmt:8443

Summary: API summary

Resource path: /healthchecklb

API version: 1.0

Description:

View Edit

Created by: API Manager Administrator

Created on: 7 March 2018, 16:33

Axway API Manager

Welcome apiadmin

API

Frontend API

Backend API

API Catalog

Editing API, HealthcheckLB

Editing API. Make your changes and click "Save" to commit them, or "Cancel" to quit.

Save Apply Cancel

Editing API

API API Methods Models

Healthcheck

*Method name: Healthcheck

Method summary: Edit method summary

*Verb: GET

*Path: /

*Response type: void

URL: https://apimgmt:8443/healthchecklb/

Description:

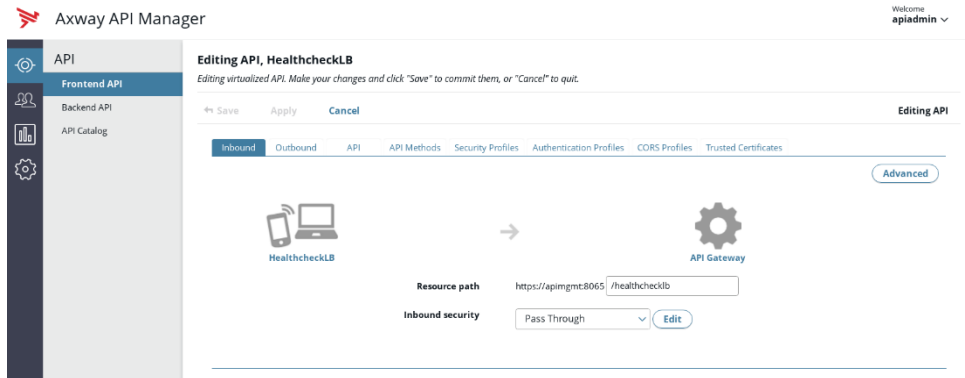
View Edit

Parameters

NAME	DESCRIPTION	TYPE	DATA TYPE	REQUIRED	ALLOW MULTIPLE
No items					

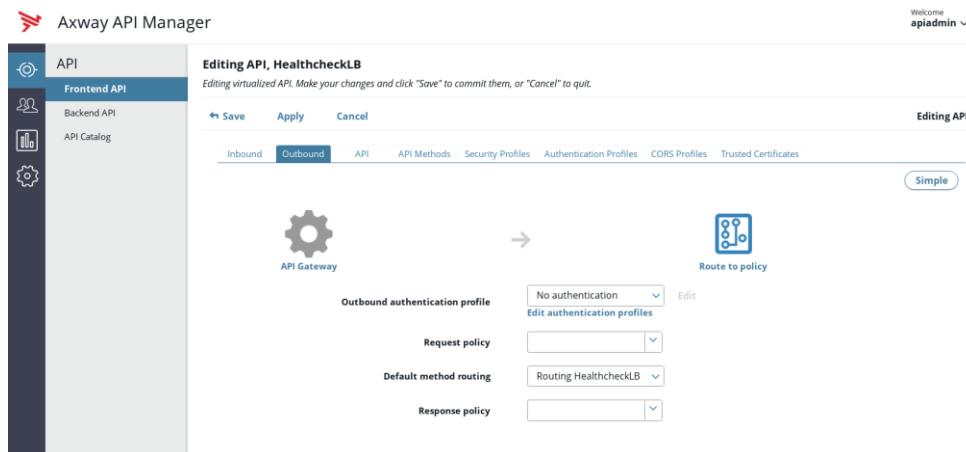
Virtualize on Frontend

Set the Inbound Security

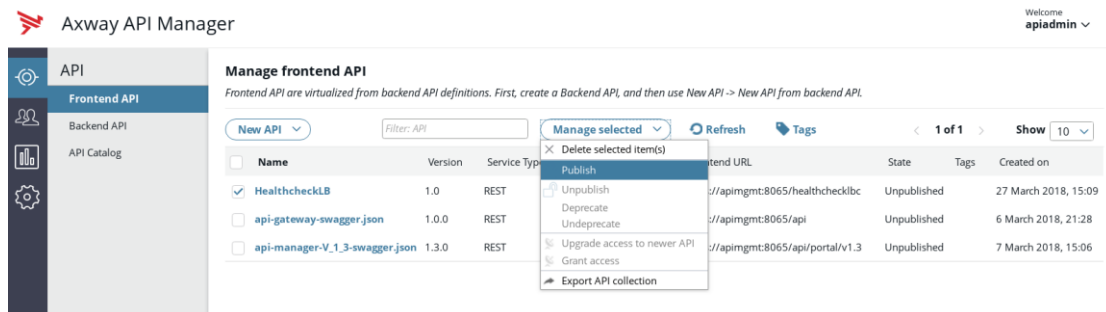


Set the outbound Configuration

Click on Advanced button, top-right screen. Select the policy "Routing HealthcheckLB" as default method Routing.



Save the API and set the API as Published



Test the API

<https://apimgmt:8065/healthchecklbc>

7. Deploy Zero Downtime Configuration

To perform a zero downtime policy deployment, follow these steps:

1. Enable zero downtime deployment in Policy Studio, and set the delays before and after deployment. For more information, see [Zero downtime settings](#).
2. Configure your load balancer to ping the Health Check LB policy periodically to determine if each API Gateway is healthy. This is available on the following default URL:

`https://APIGAMANAGER_HOST:8065/healthchecklbc`
3. Initiate deployment to a group of API Gateways using API Gateway Manager, Policy Studio, or managedomain. For more information, see [Deploy API Gateway configuration](#). The configuration is deployed sequentially to each API Gateway in the group.
4. When deployment is initiated on each API Gateway:
 - a. The Health Check LB policy returns a 503 Service Unavailable response. This indicates to the load balancer that this API Gateway is not available for traffic and the load balancer stops routing to it.
 - b. After the specified delay before deployment (for example, 10 seconds), the configuration is deployed to the API Gateway.
 - c. When the deployment is complete, the Health Check LB policy returns a 200 OK response. This indicates to the load balancer that this API Gateway is available for traffic again.
 - d. After the specified delay after deployment (for example, 10 seconds), a response is sent to the deployment request. Deployment can now be initiated to the next API Gateway in the group.