FORUM SYSTEMS HANDS-ON TRAINING

LAB 6. DEPLOYING A REST API THROUGH FORUM SENTRY

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Forum Systems Hands-on Training – Lab 6. Deploying a REST API Through Forum Sentry
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Introduction

Lab 6. Deploying a REST API through Forum Sentry

Skill Level

This lab is beginner skill level. Little to no prior experience with Forum Sentry or SOAPSonar is required.

Prerequisites

This lab requires the Forum Sentry Training Image, with a licensed copy of SOAPSonar Enterprise Edition.

Refer to the "FS_Training_Labs_v8-1_Introduction" document for information on the Forum Sentry Training Image and licensing SOAPSonar Enterprise Edition.

The online OpenWeatherMap REST API used in Lab 3 is utilized in this lab. See Lab 3 for the APPID key and information on accessing this REST API.

General knowledge of testing a REST service using SOAPSonar is assumed. This is covered in Lab 3 of this training series.

The Sentry instance used in this lab needs internet access to the online OpenWeatherMap REST API at http://openweathermap.org/api. This access is available with the online Sentry Training Image.

Lab Overview

This lab provides instructions for deploying the online OpenWeatherMap REST API, tested in Lab 3, through Forum Sentry.

Prior to this API being deployed through Sentry, clients access the API directly. A primary function of an API Gateway is to broker the traffic - behaving as a reverse proxy - so that the client cannot access the API directly.

Once the API is deployed through Sentry, the clients should never have any access to the actual service. As far as the client is concerned, the Sentry endpoint is the API.

This lab will provide instructions for deploying a REST API with Forum Sentry. Topics will include:

1. REST Policies
2. Network Policies
3. Reviewing transactions in the Sentry System and Access Logs

Forum Sentry REST Policies

A REST API is deployed in Sentry through a REST Policy. A REST Policy is a type of Content Policy. Other Content Policies include: XML Policies, JSON Policies, HTML Policies, STS Policies, and OAuth policies.

The key components to a REST Policy are:

1. Network Policies
2. Virtual Directories

Network Policies

While building a REST Policy in Sentry, you will also build the associated Network Listener and Network Remote Policies. The network policies are essentially the "plumbing" or network framework that are used to get the runtime traffic into Sentry for processing, and then sent out to the remote server. We will be working with two types of network policies in this lab:

1. Listener Policies – Listen on IP/Port and is used to accept incoming traffic
2. Remote Policies – Define where to send the processed request

Virtual Directories

The virtual directory is built as the REST Policy is built. The virtual directory ties together the network listener and network remote policies. A REST Policy may have multiple Virtual Directories. For instance, one virtual directory may be used for authentication and another for the actual API.

The Virtual Directory is also where many settings for the REST policy are modified including:

1. Virtual Path – The virtual URI for the API (the URL that the clients will use to access the service)
2. Remote Path – The URI for the remote API endpoint
3. Filter Expression – The characters allowed in the request URI following the path
4. Many more – Policy level authentication, the HTTP content-types, HTTP methods allowed, etc...

Building a REST Policy

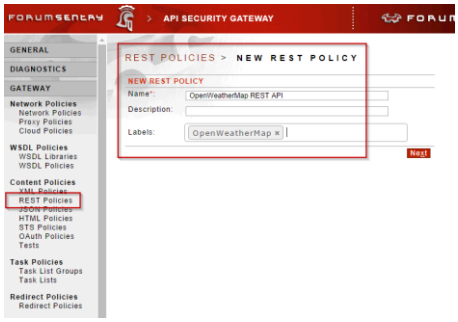
Unlike a WSDL Policy, there is no import required to generate a REST Policy.

In this step we will build a REST Policy and in doing so also create:

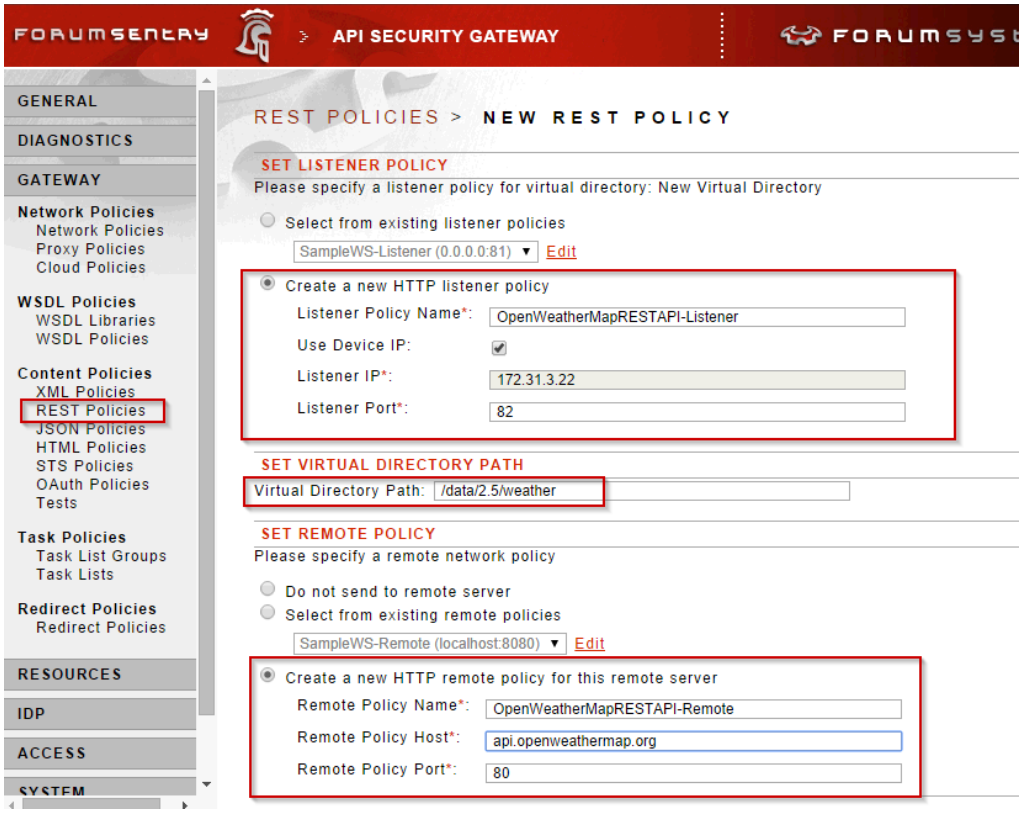
1. The network policies for this API
2. The virtual directory for this API

Follow the steps below to build a REST Policy in Sentry

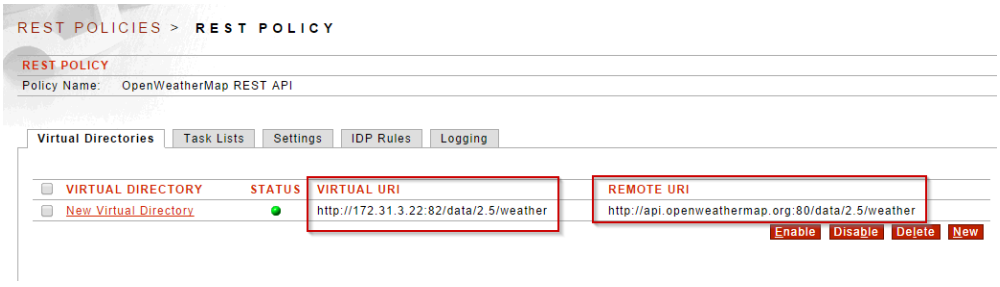
1. Navigate to the Gateway→Content Policies→REST Policies page and click New
2. Name the policy "OpenWeatherMap REST API" and add the label "OpenWeatherMap".



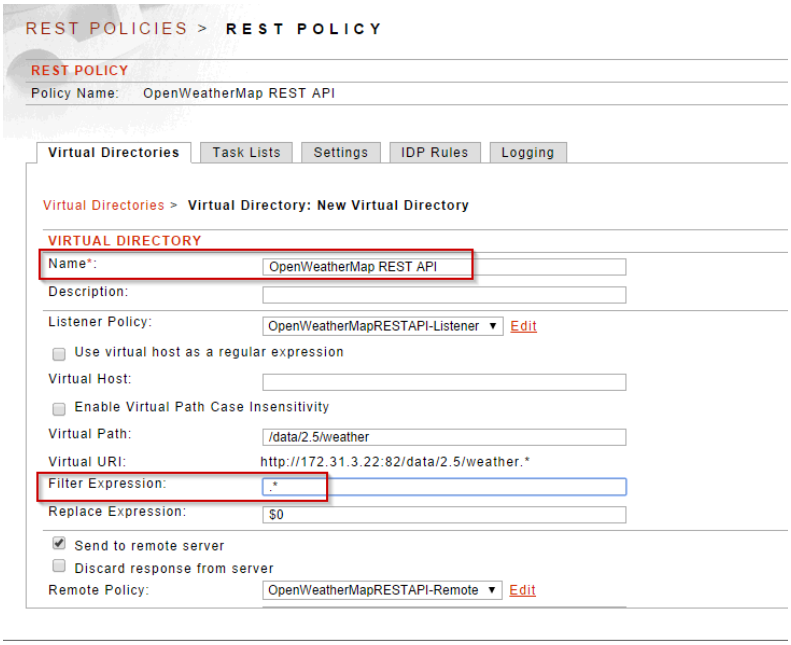
3. On the next screen, you are prompted to select existing remote policies or to build new listener and remote policies, and to enter the virtual path. Create new network policies rather than reusing any existing policies. Enter the following information to build the REST Policy for the OpenWeatherMap API:
    a. Check the “Use Device IP” box
    b. Set the listener port to: 82
    c. Set the Virtual Directory Path to: /data/2.5/weather
    d. Set the Remote Policy Host to: api.openweathermap.org
    e. Set the Remote Policy Port to: 80



4. After clicking Finish, the REST Policy is built. Notice there is a single Virtual Directory, with the Virtual URI being the Sentry endpoint (what the clients will use) and the Remote URI is the OpenWeatherMap API (where Sentry will send the processed request).



5. Access the Virtual Directory page by clicking the link “New Virtual Directory”
    a. Rename the Virtual Directory to “OpenWeatherMap REST API”
    b. Modify the Filter Expression field to a wildcard value of .* which is required so that additional characters in the URI are allowed by Sentry
    c. Scroll down and click Save



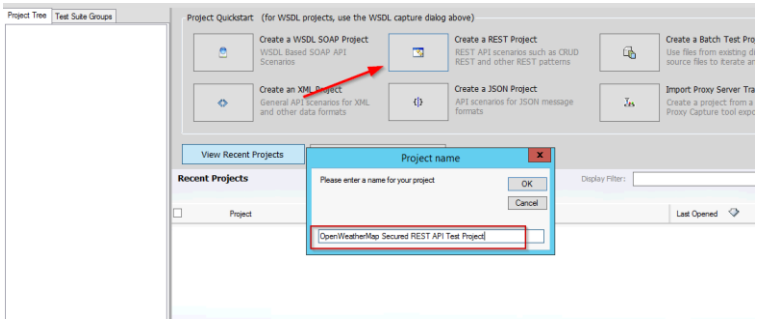
6. You have now successfully deployed the OpenWeatherMap REST API through Forum Sentry.

Testing a REST Policy

Now that OpenWeatherMap REST API has been deployed through Sentry, the clients should only access this service through Sentry.

Follow the steps below to test this Sentry secured API using SOAPSonar.

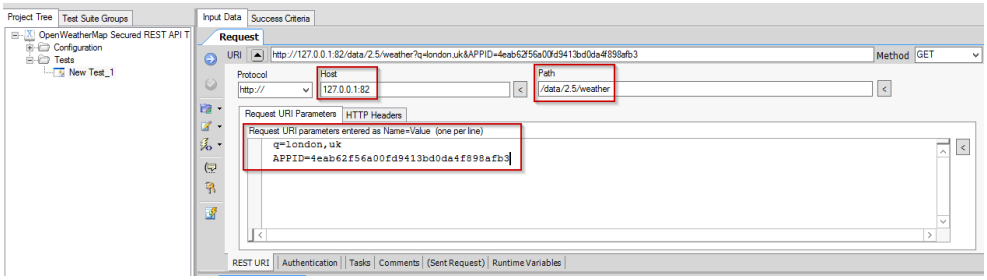
1. Launch SOAPSonar and build a new REST Project.
    a. In the Project QuickStart menu choose Create a REST Project
    b. Name the project “OpenWeatherMap Secured REST Test Project”



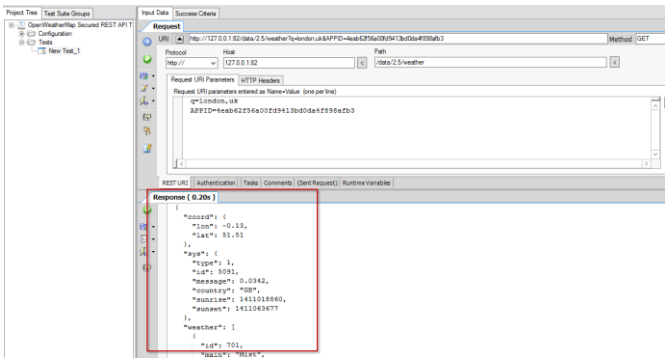
2. Build the REST Test case in SOAPSonar using the information listed below. You'll notice the Request URI field will update automatically.
    a. **Protocol:** HTTP
    b. **Host:** 127.0.0.1:82 (you can also specify the IP or hostname of the Sentry listener)
    c. **Path:** /data/2.5/weather
    d. **Request URI Parameters / Name=Value pairs (one per line):**

        q=London,uk

        appid= 4eab62f56a00fd9413bd0da4f898afb3



3. Click the  to commit the settings, and send the request using the  .
You will receive a JSON response with the weather data requested for the region entered.

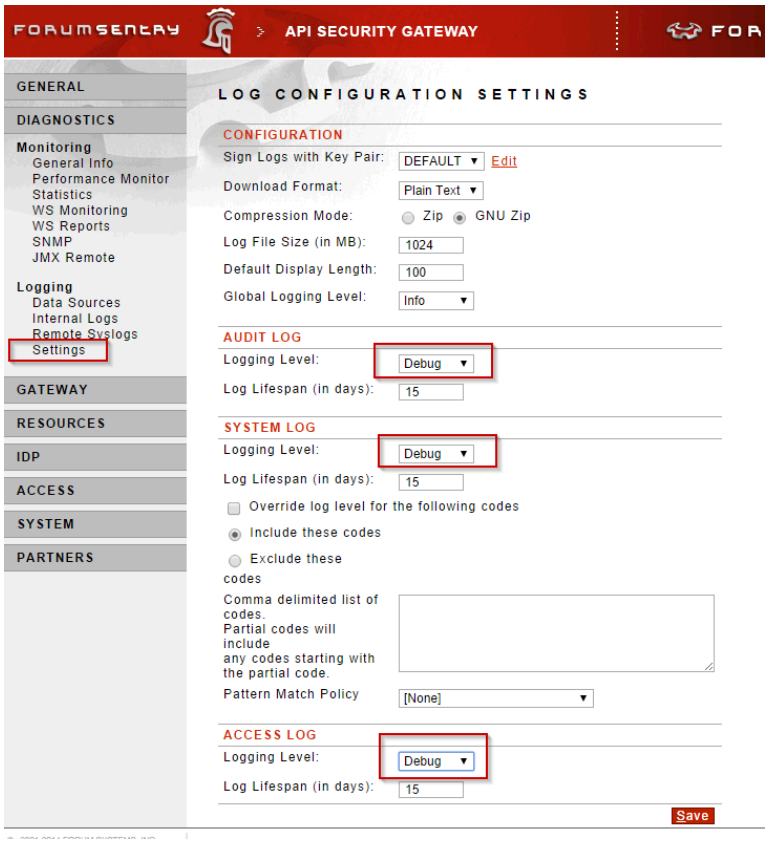


Transactions in the Sentry Logs

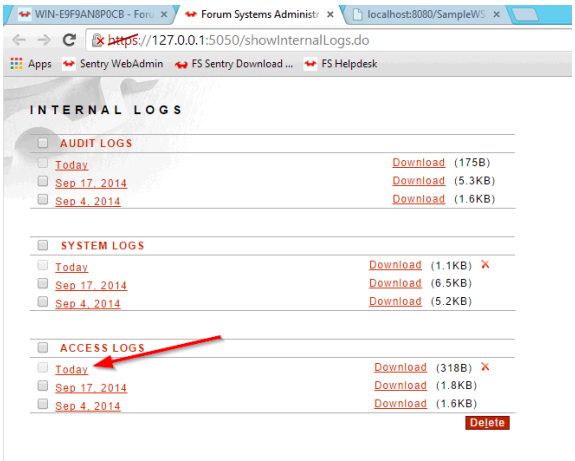
Now that you are able to send the OpenWeatherMap REST API calls through Sentry, it is helpful to review a successful transaction at DEBUG level. The runtime traffic can be seen in both the Access and System log. Follow the steps below to enable DEBUG level logging and then review a successful transaction in the Sentry Access and System logs.

Follow the steps below to review the runtime transactions in the Sentry logs:

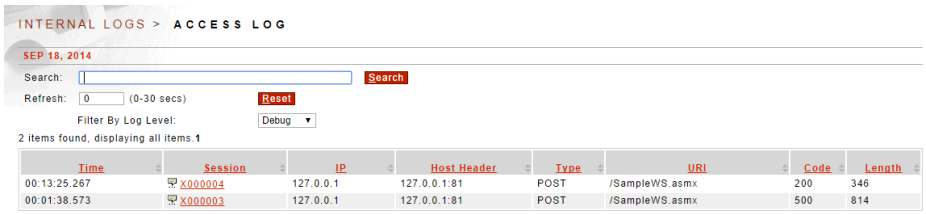
1. Navigate to the Diagnostics→Logging→Settings page
2. Set the log level for the Audit, System, and Access logs to DEBUG and click Save



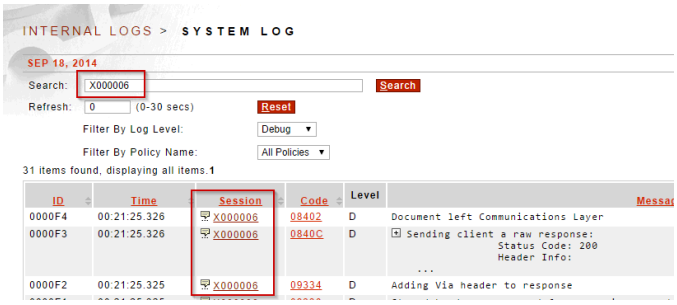
3. Send another request from SOAPSonar through Sentry
4. Navigate to the Diagnostics→Logging→Internal Logs page
5. Open the Access Log for Today (hint, right click and open the log in another browser tab)



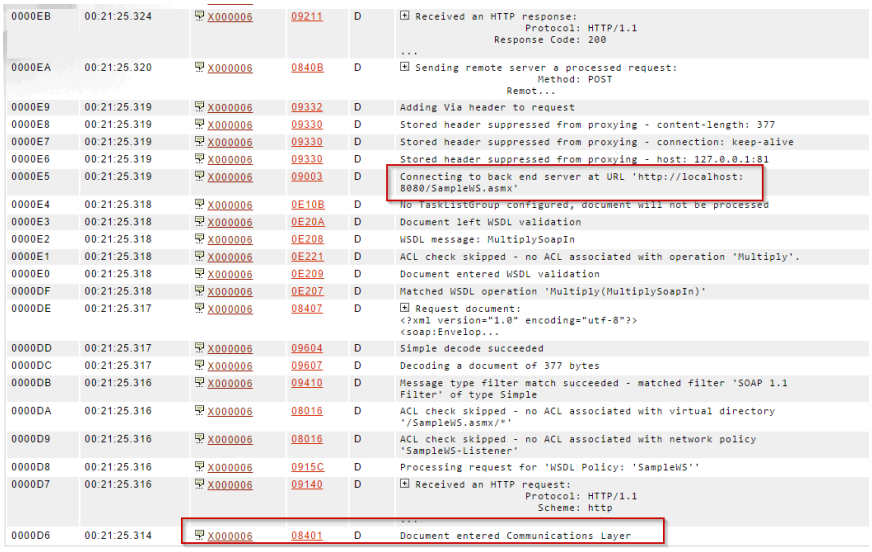
6. Notice that all of the previous runtime transactions are listed, one per line. The line shows the time of the request, the Session ID, the Client IP, the incoming host header, the HTTP method used, the URI (virtual directory triggered), the status code, and the request length for the transaction.



7. Click the most recent Session ID (at top by default) to jump to the System log.
8. The System log will be sorted only showing log messages for this Session (transaction).



9. The most recent log messages are listed at the top of the log by default. Scroll to the bottom to see the first log message for the transaction “Document entered communication layer” and read up from there to see all processing done in Sentry.



10. Note that the “connecting to remote server” line is very important. This indicates that Sentry has successfully processed the request message and is now forwarding it to the remote server. If there are any errors returned for this transaction, the failure did not occur during request processing but rather either while connecting to the remote server, in processing on the remote server, or in the Sentry processing of the response document.

END

Additional Testing and More Reading

BACK IT UP!

It is recommended that you export your REST Policy and/or your full Sentry configuration after completing this lab. To export the REST policy, navigate to the REST Policies page, select the REST policy and use the GDM Export option to export the policy (and all dependencies) as a password encrypted FSG file. This can later be imported on the System→Configuration→Import/Export screen.

To export your full Sentry configuration, navigate to the System→Configuration→Import/Export screen and use the Export option in the center of the page to export the full Sentry configuration file as a password encrypted FSX file. This can later be imported on the same screen.

Backup your SOAPSonar project file by using the File→Save As option. All of your test cases will be saved in an .SSP file.

Additional Tests

1. A browser can also be used to test this REST API. Simply copy/paste the Request URI from the SOAPSonar test case into the Address bar of the browser.
2. What happens if you send a request into the wrong URI?
3. What happens if you change the HTTP Method to POST?

Later labs will explore how to apply security to this REST API, including: SSL, authentication, and query parameter filtering.

Additional Information

For more information, review the following Forum Sentry Admin Guides:

1. Network Policies Guide
2. REST Policies Guide

For more information on the OpenWeatherMap API see: http://openweathermap.org/api

About Forum Systems

Forum Systems is the global leader in API and Cloud Security technology with industry-certified, patented, and proven products deployed in the most rigorous and demanding customer environments worldwide. Forum Systems has been an industry leader for over 12 years and has built the core architecture of its technology on the foundation of FIPS 140-2 and NDPP. Forum Systems security-first mindset enables trusted, network edge deployments of its technology for protecting critical enterprise transactions.

Our product technology is purpose-built and designed for mission-critical, enterprise-class scalable solutions where business solutions require the modern day security and identity enforcement protection, while enabling a scalable architecture and low-latency, high-volume throughput.

Forum Systems supports global enterprise customers across industries in commercial, government, and military sectors. Forum Systems technology provides the leading-edge of modern-day cyber-security innovation with integrated identity and SSO features that enable out-of-the box business solutions with point-and-click technology.

Forum's patented; FIPS 140-2 and NDPP certified hardware and virtual products make modern-day business communications secure by actively protecting and accelerating data exchange and API service access across networks and business boundaries. For more information, please visit www.forumsys.com.