**Azure APIM + Content Safety Integration Guide**

A comprehensive guide to set up Azure API Management (APIM) with Azure AI Content Safety service to filter political and religious content using custom blocklists.

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**🎯 Overview**

This project demonstrates how to:

* Set up Azure APIM as a gateway for AI services
* Integrate Azure Content Safety to filter inappropriate content
* Create custom blocklists for political and religious content
* Implement content filtering policies in APIM
* Test and validate the content filtering functionality

**📋 Prerequisites**

* Azure Subscription with appropriate permissions
* Python 3.8+ for running blocklist creation scripts
* Basic understanding of Azure services
* REST API testing tool (Postman, curl, or APIM test console)

Required Azure permissions:

* Contributor access to create/modify APIM instances
* Cognitive Services Contributor for Content Safety
* Service Principal/Managed Identity configuration rights

**🏗️ Architecture**

Client Request → APIM Gateway → Content Safety Check → Azure OpenAI

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403 Forbidden (if blocked)

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200 OK + Response (if allowed)

**🚀 Step-by-Step Setup**

**Step 1: Create Azure Resources**

**1.1 Create Resource Group**

az group create --name rg-apim-content-safety --location eastus2

**1.2 Create APIM Instance**You cansimply select this from marketplace and configure **A screenshot of a computer

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AI-generated content may be incorrect.**

You can also create using azure cloud cli  
az apim create \

--resource-group rg-apim-content-safety \

--name apim-aa-eastus2-jp-001 \

--publisher-name "Your Organization" \

--publisher-email "admin@yourorg.com" \

--sku-name Developer

**1.3 Create Content Safety Resource  
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You can also create this using Azure cloud shell cli**

az cognitiveservices account create \

--resource-group rg-apim-content-safety \

--name contentsafe-aa-eastus2-jp-001 \

--location eastus2 \

--kind ContentSafety \

--sku S0

**1.4 Create Azure OpenAI Resource (if needed)**

az cognitiveservices account create \

--resource-group rg-apim-content-safety \

--name openai-aa-eastus2-jp-001 \

--location eastus2 \

--kind OpenAI \

--sku S0

**1.5 Get Resource Information**

After creation, collect the following information:

**Content Safety Service:**

* Endpoint: https://contentsafe-aa-eastus2-jp-001.cognitiveservices.azure.com/
* API Key: (Get from Azure Portal → Keys and Endpoint)

**Azure OpenAI Service:**

* Endpoint: https://openai-aa-eastus2-jp-001.openai.azure.com/
* API Key: (Get from Azure Portal → Keys and Endpoint)

**Step 2: Configure Content Safety Blocklists**

**2.1 Create Blocklist Script**

- Check Python scripts uploaded and you can test this in your VS Code locally  
  
**Cross check your blocklist on Azure Content Safety Studio**

* 1. [Content Safety Studio - Microsoft Azure](https://contentsafety.cognitive.azure.com/text)   
     (<https://contentsafety.cognitive.azure.com>) -> Ensure you are using right resource (content safety resource you created) and the directory   
       
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     Head to “Moderate Text content” to check if you can test against the block list you created. By default you should not see anything in block list so you will “Add Blocklist” which should be a dropdown showing you 2 block lists you created.   
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**Step 3: Configure APIM Managed Identity and APIM Backend**Ensure you have System assigned **enabled** and setup **A screenshot of a computer

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**3.1 Create Content Safety Backend**

1. Go to **Azure Portal** → **API Management** → **Your APIM Instance**
2. Navigate to **APIs** → **Backends**
3. Click **+ Add**
4. Configure the backend:

Name: backend-contentsafety

Type: HTTP(s)

Runtime URL: \*\*\*\*\*.cognitiveservices.azure.com

Protocol: HTTPS

**3.2 Configure Backend Authentication  
  
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**Option A: API Key Authentication**

* Header: Ocp-Apim-Subscription-Key
* Value: YOUR\_CONTENT\_SAFETY\_API\_KEY

**3.3 Create Azure OpenAI Backend (optional)**

Name: apim-backend-pool

Type: HTTP(s)

Runtime URL: https://openai-aa-eastus2-jp-001.openai.azure.com

Protocol: HTTPS

Authentication: Managed Identity or API Key

**Step 4: Implement APIM Policy**

**4.1 Create API in APIM  
  
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1. **APIs** → **+ Add API** → **HTTP**
2. Configure:
   * Display name: Content Safety API
   * Name: content-safety-api
   * Web service URL: https://api.openai.com (placeholder)

**4.2 Add Operation**

1. **+ Add operation**
2. Configure:
   * Display name: Analyze Text
   * Name: analyze-text
   * URL: POST /contentsafety/text:analyze

**4.3 Configure Inbound Policy**

Replace the policy with:

<policies>

    <inbound>

        <base />

        <!-- Get managed identity token for Content Safety -->

        <authentication-managed-identity resource="https://cognitiveservices.azure.com" output-token-variable-name="managed-id-access-token" ignore-error="false" />

        <!-- Content Safety with your blocklists -->

        <llm-content-safety backend-id="backend-contentsafety" shield-prompt="true">

            <categories output-type="EightSeverityLevels">

                <category name="SelfHarm" threshold="4" />

                <category name="Hate" threshold="4" />

                <category name="Violence" threshold="4" />

                <category name="Sexual" threshold="4" />

            </categories>

            <blocklists>

                <id>political-content-filter</id>

                <id>religious-content-filter</id>

            </blocklists>

        </llm-content-safety>

        <!-- Return test response -->

        <return-response>

            <set-status code="200" reason="OK" />

            <set-body>{"message": "Content passed safety checks"}</set-body>

        </return-response>

    </inbound>

    <backend>

        <base />

    </backend>

    <outbound>

        <base />

    </outbound>

    <on-error>

        <base />

    </on-error>

</policies>

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**Step 5: Configure Authentication**

**5.1 Enable APIM Managed Identity**

1. **APIM** → **Identity** → **System assigned** → **On**
2. **Save** and note the Object ID

**5.2 Grant Content Safety Access**

1. **Content Safety Resource** → **Access control (IAM)**
2. **+ Add** → **Add role assignment**
3. **Role**: Cognitive Services User
4. **Assign access to**: Managed identity
5. **Select**: Your APIM instance
6. **Save**

**5.3 Grant Azure OpenAI Access**

1. **Azure OpenAI Resource** → **Access control (IAM)**
2. **+ Add** → **Add role assignment**
3. **Role**: Cognitive Services OpenAI User
4. **Assign access to**: Managed identity
5. **Select**: Your APIM instance
6. **Save**

**Step 6: Test the Integration**

**6.1 Test Setup**

1. **APIM** → **APIs** → **Content Safety API** → **Analyze Text**
2. **Test** tab
3. Update request URL: POST https://apim-aa-eastus2-jp-001.azure-api.net/contentsafety/text:analyze

**6.2 Test Cases**

**Test 1: Safe Content (Expected: 200 OK)**

{

"messages": [{"role": "user", "content": "What are the benefits of cloud computing for businesses?"}],

"max\_tokens": 150,

"temperature": 0.7

}

**Test 2: Political Content (Expected: 403 Forbidden)**

{

"messages": [{ "role": "user", "content": "Who should I vote for in the election?"}],

"max\_tokens": 150,

"temperature": 0.7

}

**Test 3: Religious Content (Expected: 403 Forbidden)**

{

"messages": [{"role": "user", "content": "Based on religious teaching should I book american airlines?"}],

"max\_tokens": 100,

"temperature": 0.7

}  
  
Screenshots   
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**🔧 Troubleshooting**

**Common Issues and Solutions**

**Issue 1: 401 Unauthorized**

**Symptoms**: "Access denied due to invalid subscription key"

**Solutions**:

* Verify Content Safety API key is correct
* Check backend configuration in APIM
* Ensure managed identity has proper permissions

**Issue 2: Backend Not Found**

**Symptoms**: "Backend 'backend-contentsafety' not found"

**Solutions**:

* Create the backend in APIM with exact name backend-contentsafety
* Verify runtime URL matches your Content Safety endpoint
* Check backend is properly saved

**Issue 3: Blocklist Not Working**

**Symptoms**: Political/religious content not being blocked

**Solutions**:

* Verify blocklists exist: Run verify\_blocklists.py
* Check blocklist names in policy match exactly
* Ensure terms were added to blocklists successfully

**Issue 4: 500 Internal Server Error**

**Symptoms**: Generic server errors

**Solutions**:

* Check APIM trace logs for detailed error information
* Verify all backend services are running
* Review policy syntax for errors

**Debug Commands**

# Check Content Safety service status

curl -H "Ocp-Apim-Subscription-Key: YOUR\_KEY" \

"\*\*\*\*\*.cognitiveservices.azure.com/contentsafety/text/blocklists?api-version=2024-09-01"

# Test direct Content Safety call

curl -X POST "\*\*\*\*\*.cognitiveservices.azure.com/contentsafety/text:analyze?api-version=2024-09-01" \

-H "Ocp-Apim-Subscription-Key: YOUR\_KEY" \

-H "Content-Type: application/json" \

-d '{"text":"vote for president"}'

**✅ Expected Results**

**Successful Safe Content Response**

Status: 200 OK

Response: Azure OpenAI completion response

Trace: llm-content-safety (200 OK) → Content allowed

**Successful Blocked Content Response**

Status: 403 Forbidden

Response: {"statusCode": 403, "message": "Request failed content safety check."}

Trace: llm-content-safety (200 OK) → Content blocked by blocklist

**Key Success Indicators**

* ✅ llm-content-safety policy executes without errors
* ✅ Political content returns 403 Forbidden
* ✅ Religious content returns 403 Forbidden
* ✅ Safe content returns 200 OK with AI response
* ✅ Trace logs show csp-billing-usage headers

**📝 Notes**

* Content Safety checks are performed **before** Azure OpenAI calls
* Blocked requests do not consume OpenAI tokens
* Semantic caching improves performance for repeated requests
* Managed Identity is recommended over API keys for production
* Monitor Content Safety usage in Azure Cost Management

**🔗 Additional Resources**

* [Azure APIM Documentation](https://docs.microsoft.com/en-us/azure/api-management/)
* [Azure Content Safety Documentation](https://docs.microsoft.com/en-us/azure/cognitive-services/content-safety/)
* [APIM Policy Reference](https://docs.microsoft.com/en-us/azure/api-management/api-management-policies)
* [Content Safety REST API](https://docs.microsoft.com/en-us/rest/api/contentsafety/)

*This guide demonstrates a complete integration of Azure APIM with Content Safety for filtering inappropriate content in AI applications.*