Integration Technical Conference 2019

Porting APIs from v5 to API Gateway Service

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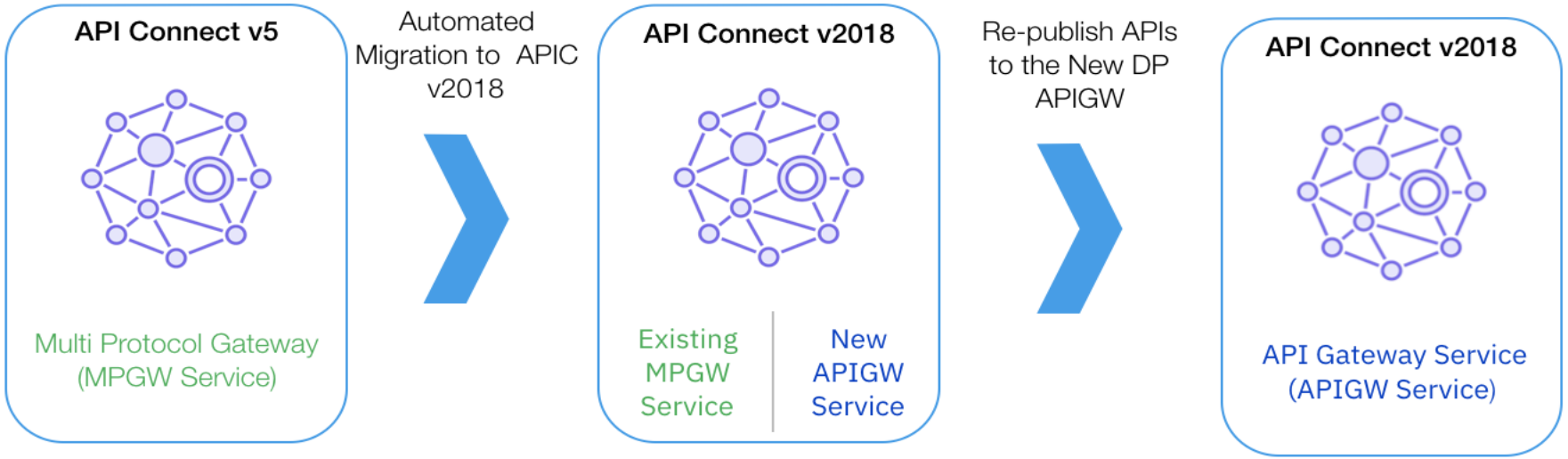
Agenda

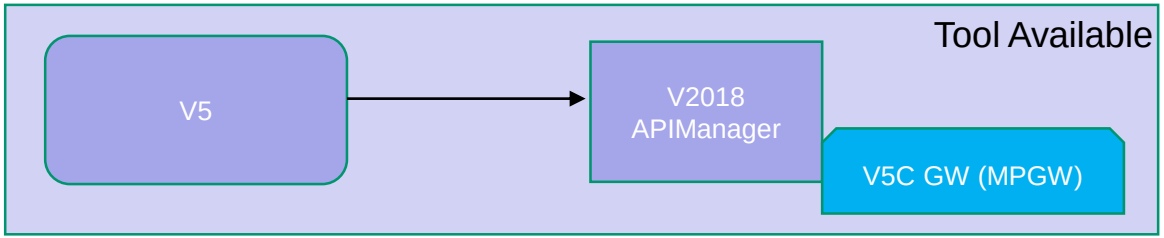
- Types of Gateway
- Migration paths
- High level architecture of v2018
- Key improvements in APIGW
- Porting from V5/V5C to API Gateway
  - Assembly Policies
  - OAuth Provider APIs to Objects
  - Custom Policies & Gateway Extensions in APIGW
- Open API V3 support
- Demo

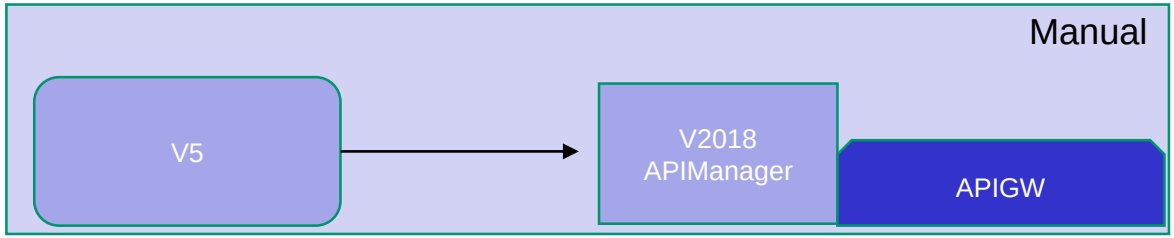
Types of Gateway – v5, v5c and APIGW

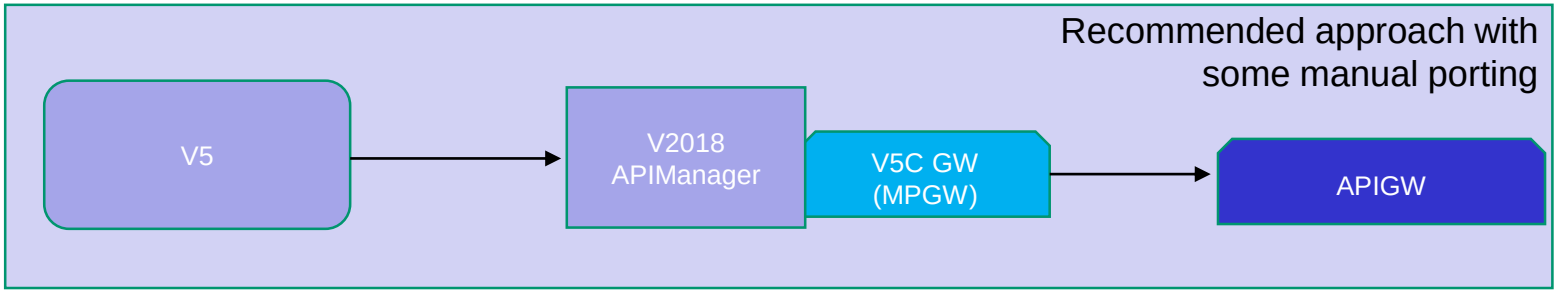


- **Migration tooling will automatically move APIs as-is to v2018 v5c (MPGW)**
- **Migration Tooling will NOT migrate APIs to the New APIGW Service.** Clients will port assembly and re-publish to API Gateway Service

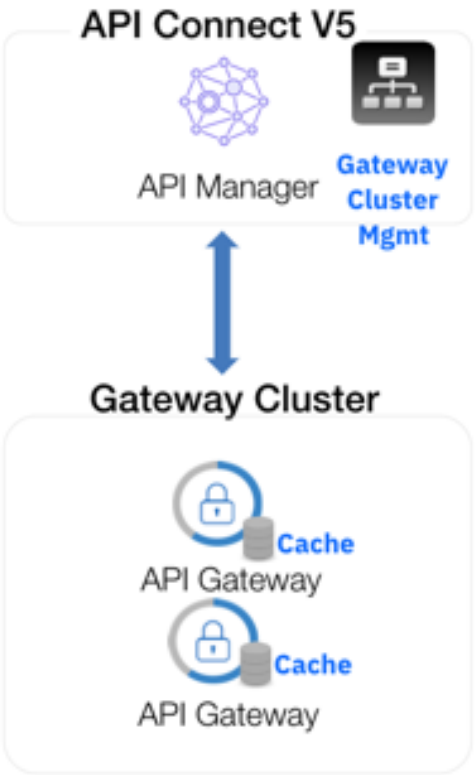
Migration Paths



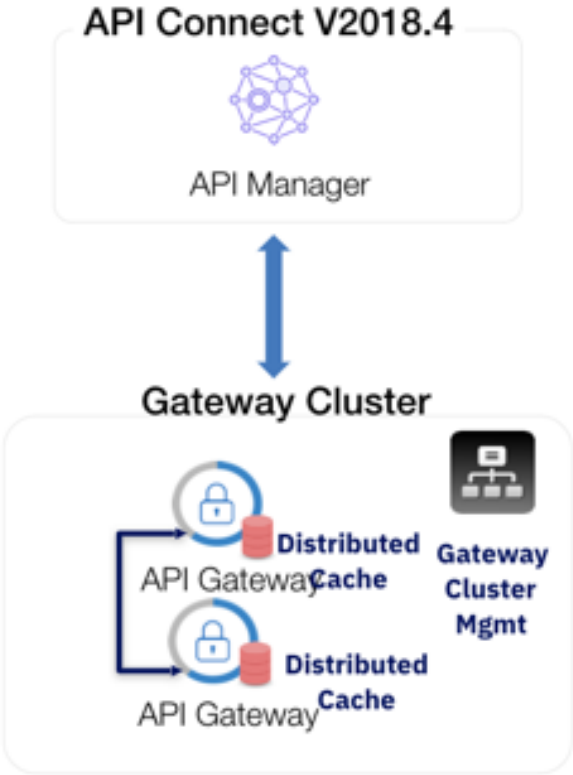




Multi-cloud scalable API Manager & Gateway Architecture

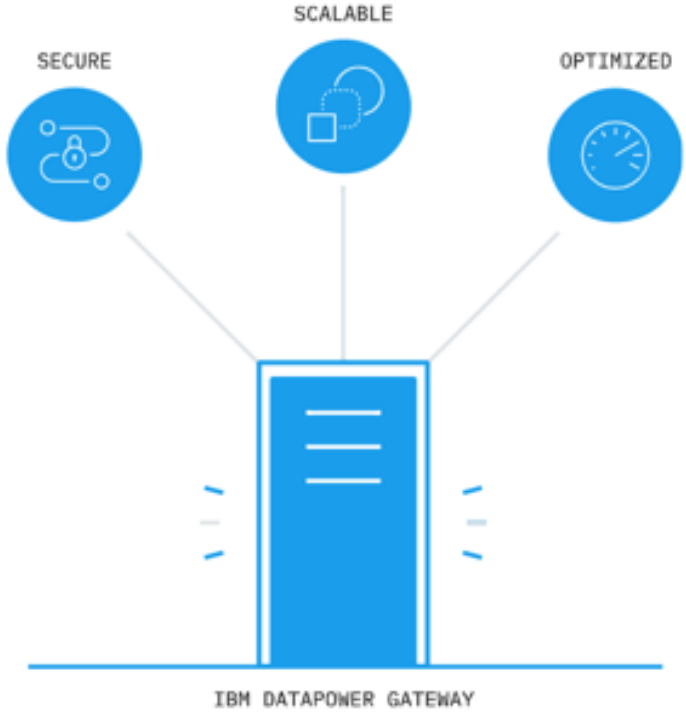


- **Gateway Cluster management moved to the API Gateway** in API Connect V2018.4 from the API manager in API Connect V5
- **API Gateway Data Replication** performed between API Gateway members in API Connect V2018.4 instead of the API Manager in API Connect V5
- **Reduces the runtime dependency** between the API Gateway and API Manager in API Connect V2018.4



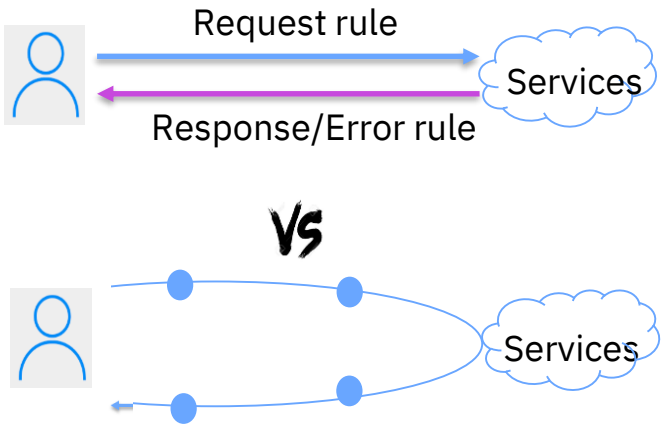
DataPower API Gateway Service: Secure & Performant APIs

- **Secure to the core** with self-contained signed & encrypted image to minimize risk, plus proven security policies to quickly protect APIs
- **Up to 5X increased performance** with natively built API Gateway using purpose-built technology for native OpenAPI/Swagger REST and SOAP APIs
- **Multi-cloud scalability and extensibility** to help meet SLAs and improve client user experience
- **Optimized drag & drop built-in policies** fully unleash the power of the gateway for security, traffic control and mediation including flexible OAuth, enhanced JSON & XML threat protection

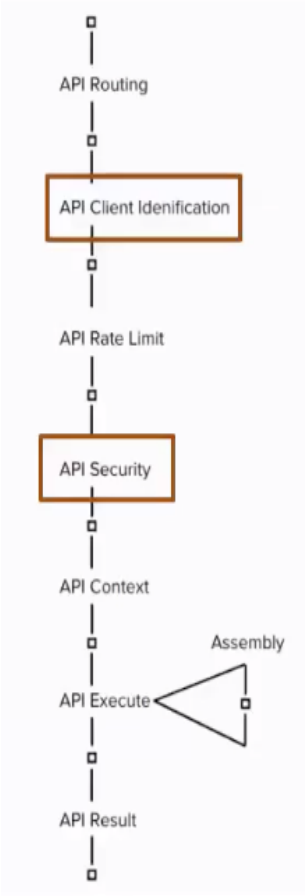


API Gateway Service

- APIGW was redesigned and reimplemented from scratch
- Natively written with no interpretive XSLT layer
- 5x increased performance
- Horseshoe request/response pattern
- WYSIWG (What you see in APIManager is what you get in DataPower)

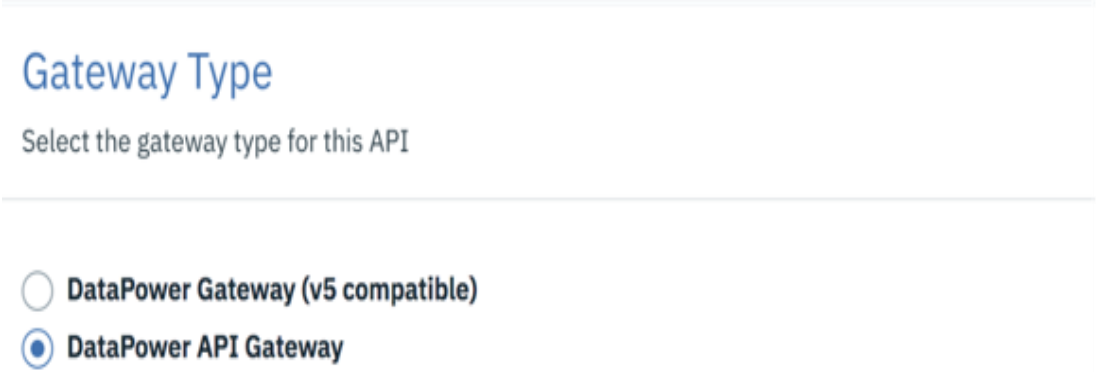


- API Application Type
- API Collection
- API Definition
- API LDAP Registry
- API Operation
- API Operation Rate Limit
- API Path
- API Plan
- API Rule
- API Schema
- API Security API Key
- API Security Basic Authentication
- API Security OAuth
- API Security OAuth Requirement
- API Security Requirement
- API Security Token Manager



Porting from V5/V5C to API Gateway

- Set gateway type to “datapower-api-gateway”
- Update Assembly policies
- Port OAuth Provider APIs to objects
- Port custom policies and gateway extensions
- Leverage added support for OpenAPI V3.



Porting Assembly

- All policies have new Versions
- Switch replaces switch', 'operation-switch' & ‘if’
- Enhanced Invoke policy with whitelisting and blacklisting support
- No proxy policy – replaced by invoke
- Enhanced Activity Log, CORS, Streaming
- New policies – user security, client security, API rate limit
- Gateway script and XSLT policies
  - » New functions and extensions
  - » Wrapper available (but could degrade performance)
  - » Refer to new message and context objects

https://github.com/ibm-apiconnect/apigw/wiki/APIGW-Porting-Notes

Assembly Policies v5/v6

Features	V5c	APIGW	First Release	Notes
Invoke	✅	✅	7.7.1.0	
Map	✅	✅	7.7.1.0	
Activity Log	✅	✅*	7.7.1.0	As API Property
JSON-to-XML	✅	✅	7.7.1.1	Requires Parse
XML-to-JSON	✅	✅	7.7.1.1	Requires Parse
Set Variable	✅	✅	7.7.1.1	
Throw	✅	✅	7.7.1.1	
JWT Generate	✅	✅	7.7.1.2	
JWT Validate	✅	✅	7.7.1.2	

Assembly Policies v5/v6

Features	V5c	APIGW	First Release	Notes
If / Switch / OperationSwitch	✅	✅	2018.4.1.0	As Switch
Gateway Script	✅	✅	2018.4.1.0	
Proxy	✅	✅	2018.4.1.0	As Invoke
XSLT	✅	✅	2018.4.1.0	Requires Parse
Validate	✅	✅	2018.4.1.0	Requires Parse
LTPA Generate	✅	✕		
Redaction	✅	✕		
Validate Username Token	✅	✕		
OAuth	✕	✅	7.7.1.0	
User Security	✕	✅	7.7.1.0	
Parse	✕	✅	7.7.1.1	

Additional Policies Releasing soon:

1. Client Security
2. API Rate Limit

GatewayScript : New objects

Context

- context.message.getVariable()
- context.message.setVariable()
- context.request.body.readAsBuffer()
- context.request.body.readAsBuffers()
- context.request.body.readAsJSON()
- context.request.body.readAsXML()
- context.clear()
- context.get()
- context.set()
- context.request.headers
- context.request.header.get()
- context.reject()
- context.swagger.readAsJSON()

Message

- message.body.readAsBuffer()
- message.body.readAsBuffers()
- message.body.readAsJSON()
- message.body.readAsXML()
- message.body.write()
- message.header.get()
- message.header.remove()
- message.header.set()
- message.getVariable()
- message.setVariable()
- message.headers
- message.reasonPhrase
- message.statusCode

- message.statusCode
- message.body.readAsBuffer()
- message.body.readAsBuffers()
- message.body.readAsJSON()
- message.body.readAsXML()
- message.headers
- message.header.get()
- message.header.remove()
- message.header.set()
- message.reasonPhrase
- message.statusCode

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https://www.ibm.com/support/knowledgecenter/en/SS9H2Y_7.7.0/com.ibm.dp.doc/multistep_js.html

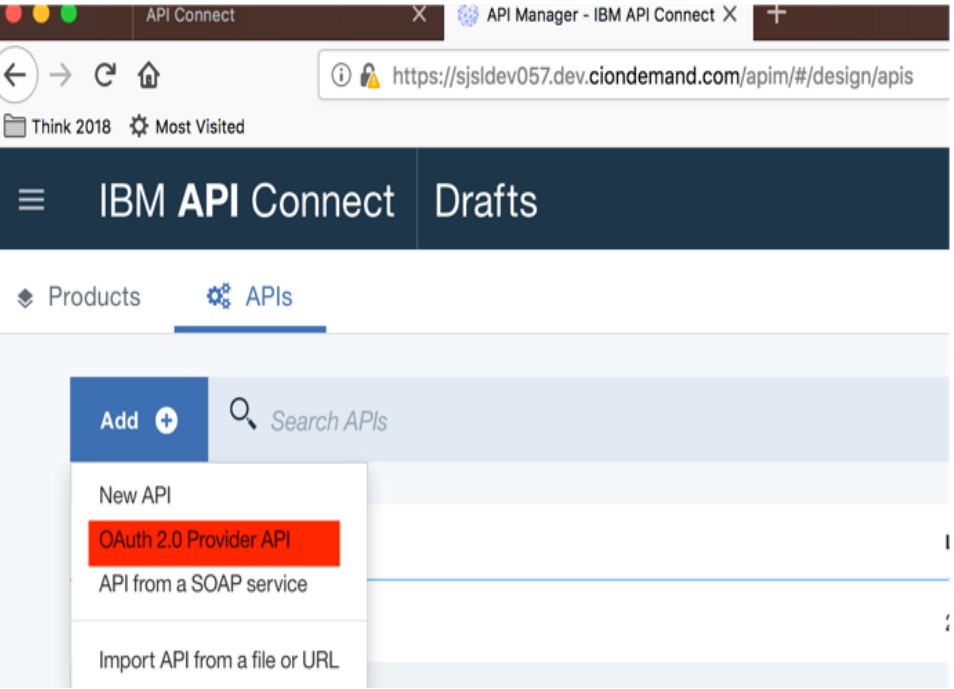
Porting OAuth Provider APIs to Objects

Steps

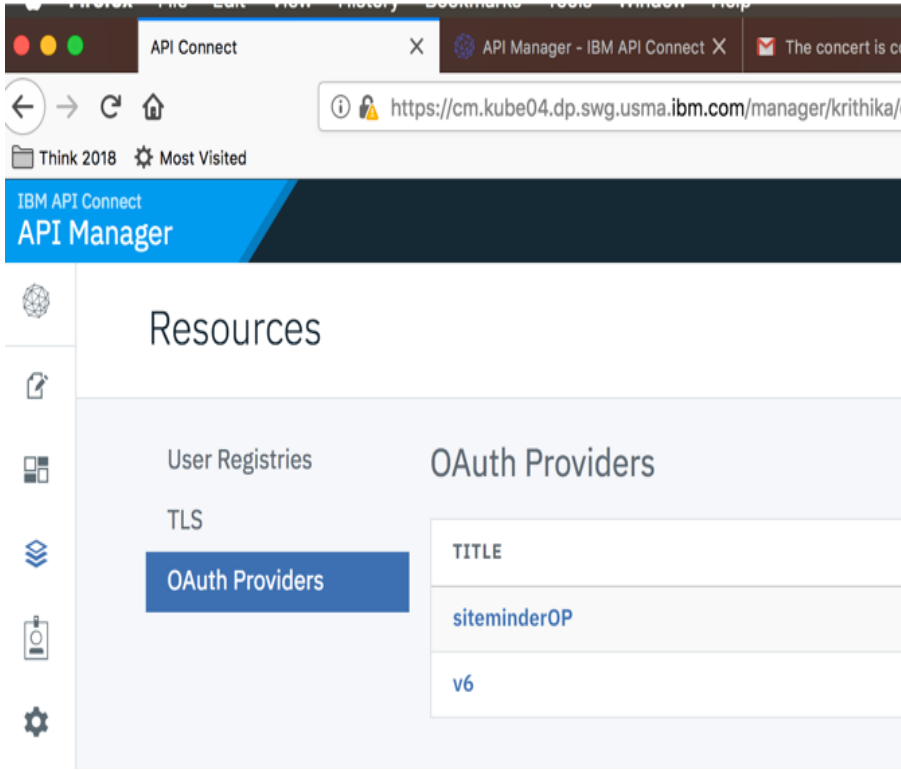
- Migrate V5 Oauth Provider API to v2018 Oauth Provider object
- OAuth Provider object has an underlying API
- Take advantage of the customizable Assembly
- Create and configure providers to a catalog
- Link the OAuth provider to the API using it - “x-ibm-oauth-provider”

OAuth API → OAuth Object

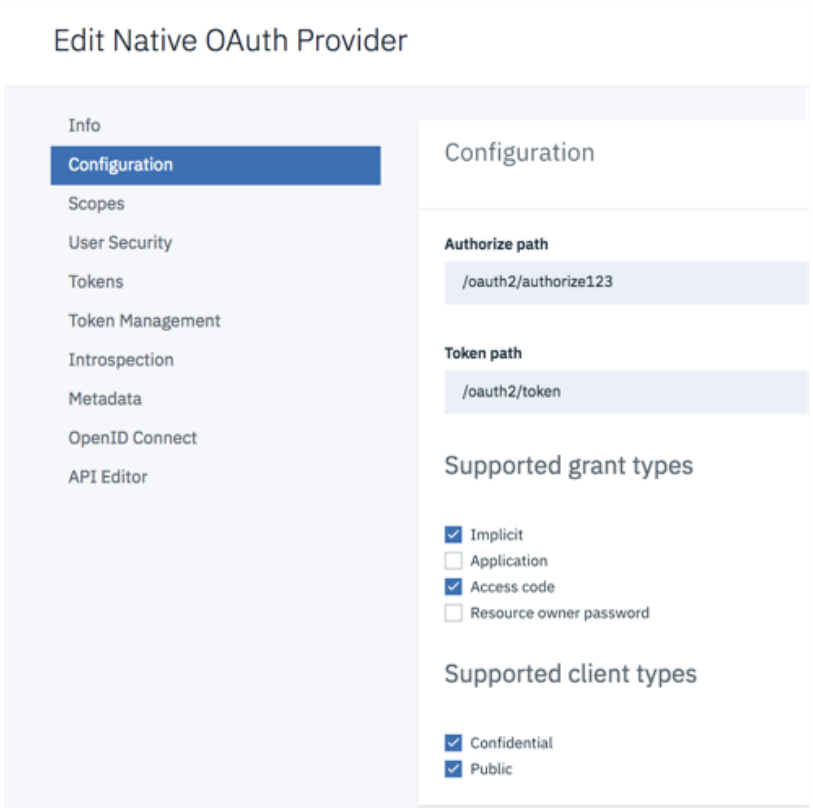
v5

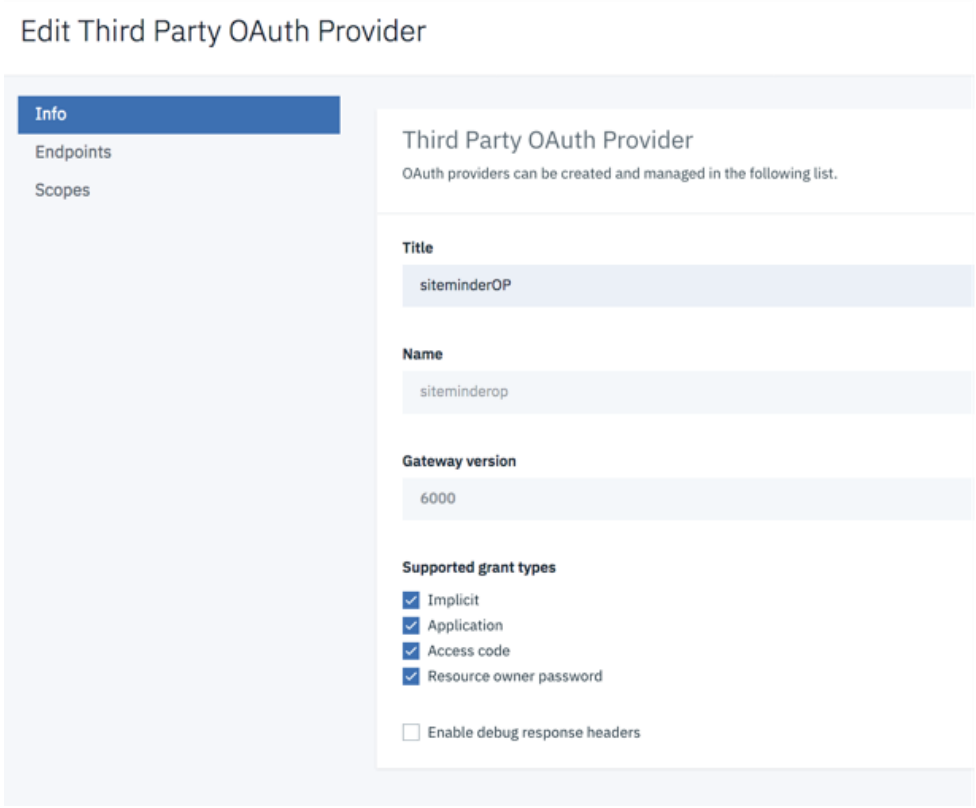


v2018

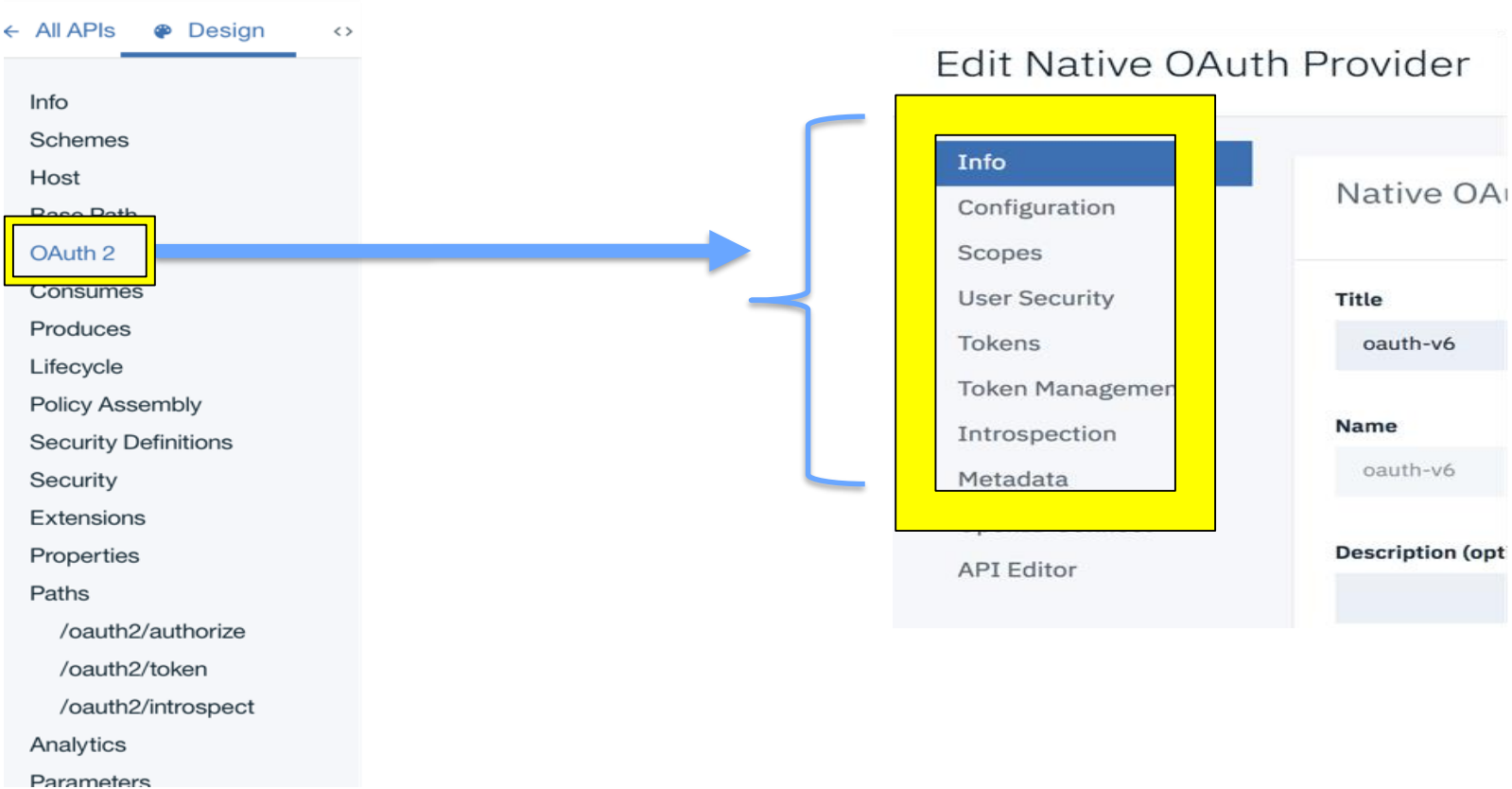


Native & Third Party Provider

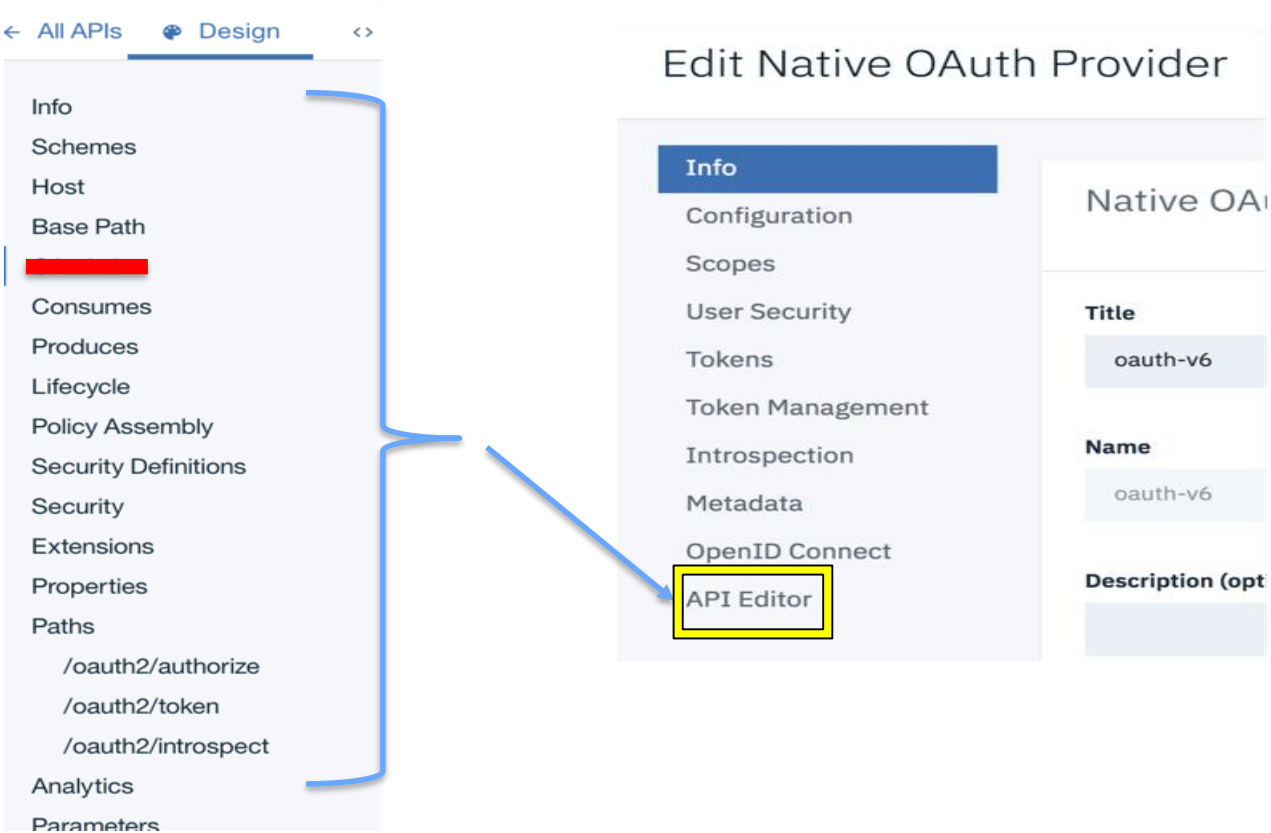




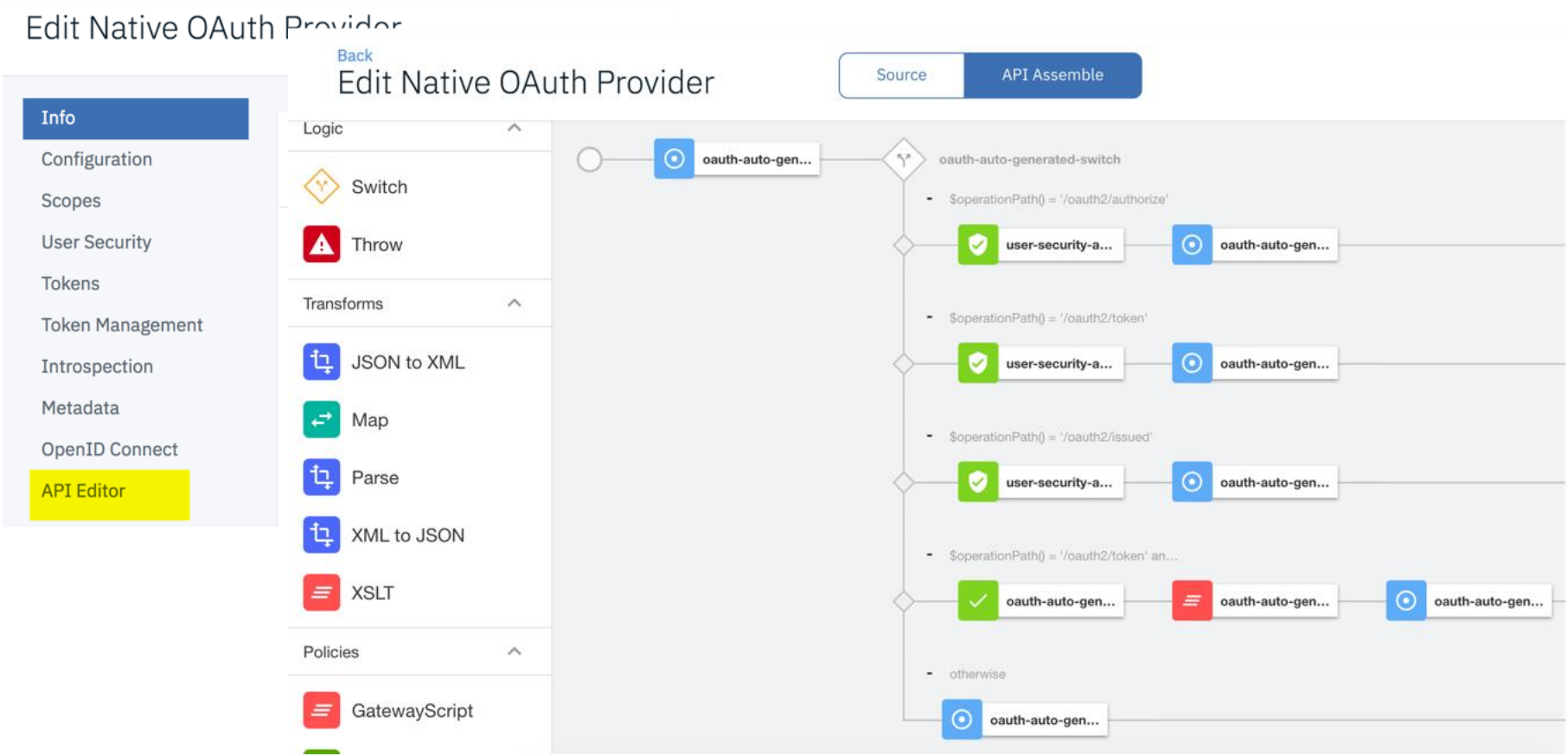
V5 (OAuth2 section) ----- > V2018 OAuth object



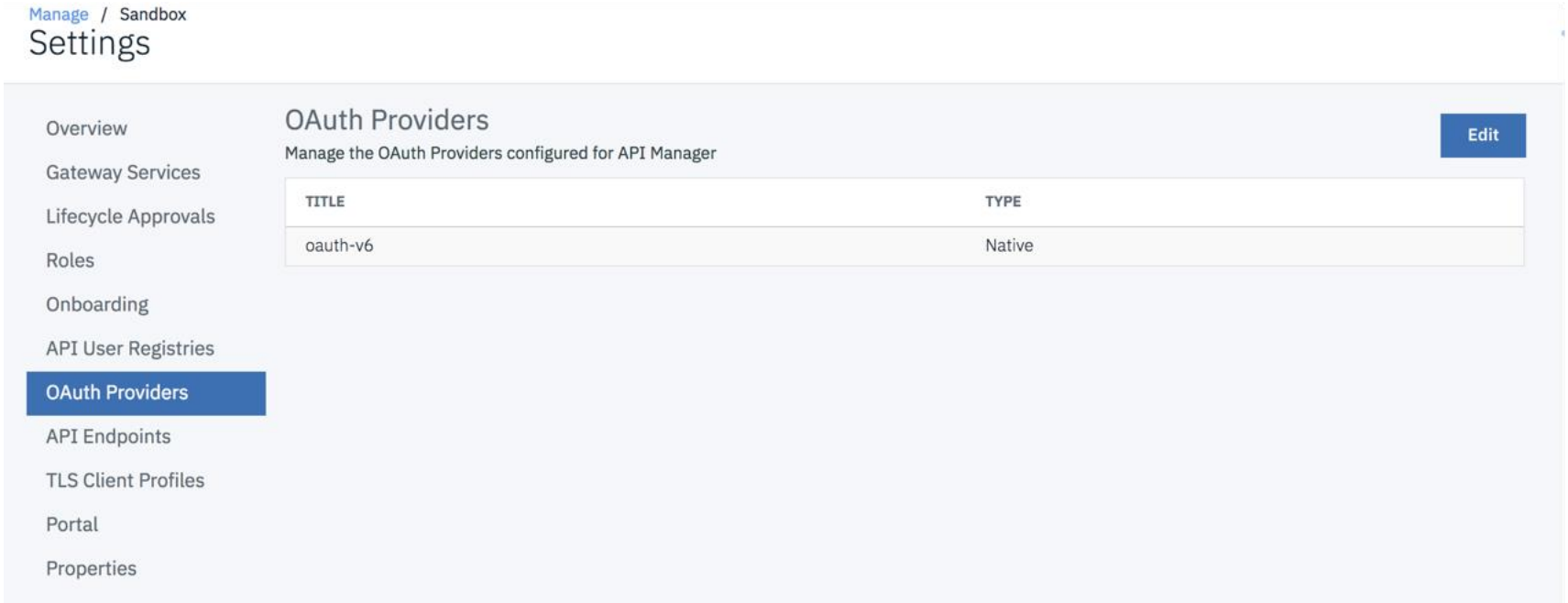
V5 Everything else ---- > V2018 Underlying API



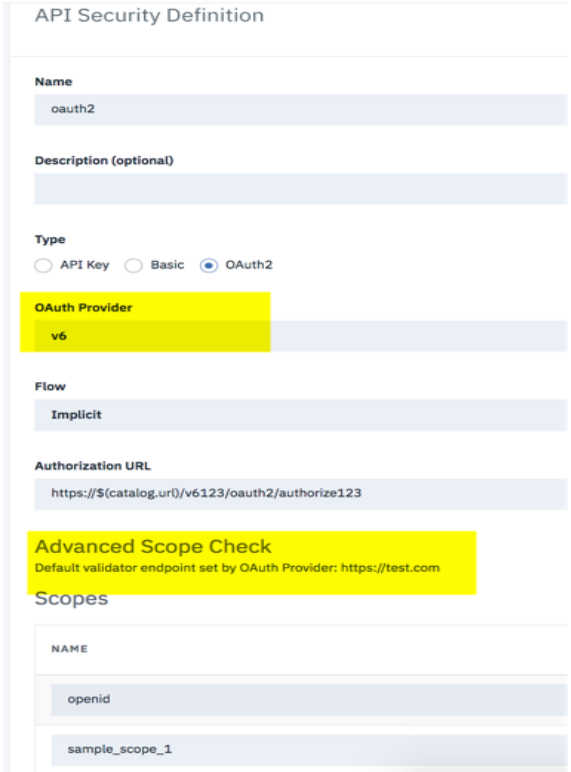
Customizable Assembly within OAuth Provider object



Configure OAuth Providers in the Catalog

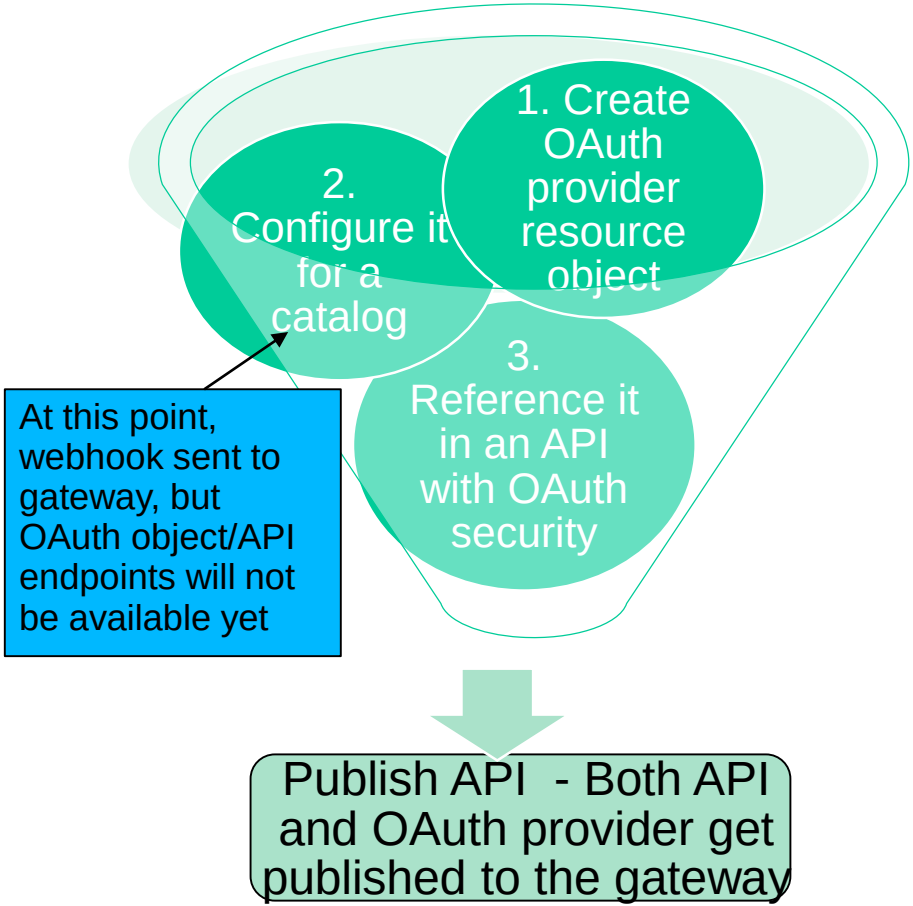


Link Provider to OAuth Security Definitions




```yaml
schemes:
  - https
basePath: /oauth-api-v6
security:
  - oauth-1:
      - scope1
securityDefinitions:
  oauth-1:
    type: oauth2
    flow: accessCode
    x-ibm-oauth-provider: oauth-v6
    authorizationUrl: 'https://$(catalog.url)/oauth-v6/oauth2/authorize'
    tokenUrl: 'https://$(catalog.url)/oauth-v6/oauth2/token'
    scopes:
      scope1: This is scope1 description
x-ibm-configuration:
  phase: realized
  testable: true
  enforced: true
  properties:
    target-url:
      value: 'http://example.com/operation-name'
      description: The URL of the target service
      encoded: false
  cors:
    enabled: true
  application-authentication:
    certificate: false
  gateway: datapower-api-gateway
```

Publish sequence – onto Gateways



- Note : Unless the OAuth provider is used by at least one of the APIs in the Security Definition, the Oauth provider endpoints are not available in Gateway
- Any updates to OAuth provider or its underlying API will take effect immediately on the gateway (no need to republish once already configured in catalog and used by any API)
- Until the last API that uses an OAuth provider is published, the OAuth provider and its API also remain published in the gateway

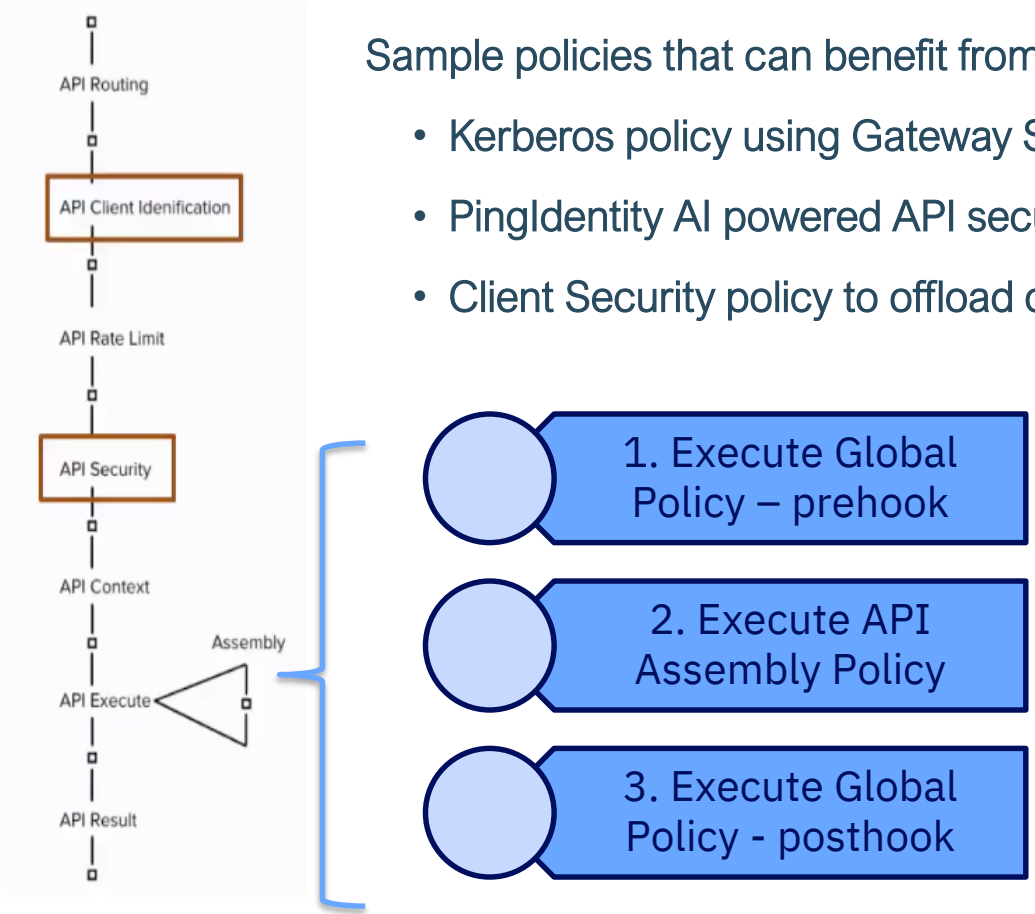
Porting User Defined Policies in APIGW

- Converting User Defined Policies
  - Available soon
  - Basic Converting Policies Steps
    - 1 - Import existing v5c policy, save, copy the config from DP
    - 2 - create gateway script to call the rule

```
var ms = require('multistep');
ms.callRule('saml-validation-policy-main', 'request', 'message', function(error)
    { if (error) { throw error; } });
```

    - 3 – Changed location of some common utils
      - local:///isp/policy/apim.custom.xsl to store:///dp/apim.custom.xsl
      - local:isp/policy/apim.custom.js to require('apim');
  - May need to do some marshalling to support the policies as some context was setup in V5.

Gateway Extensions in v5 –> Global Policies in APIGW

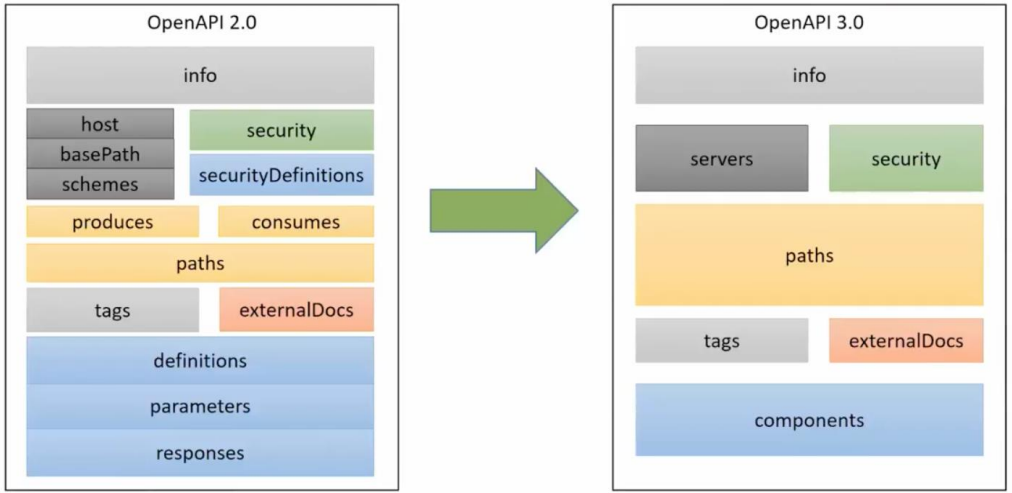


Sample policies that can benefit from being a global policies

- Kerberos policy using Gateway Script (Poc done for a customer)
- PingIdentity AI powered API security policy (Demoed at THINK 2019)
- Client Security policy to offload client authentication (available soon)

OpenAPI V3 Support

- Partial OAI3 support
  - Focused around Berlin Group PSD2 (OpenBanking)
- General Limitations
  - Single Server
  - Most policies
    - Limited to JSON Schema Version 4
- Currently CLI only



https://www.ibm.com/support/knowledgecenter/en/SSMNED_2018/com.ibm.apic.toolkit.doc/rapic_oai3_support.html

Demo

Thank You