

# MuleSoft

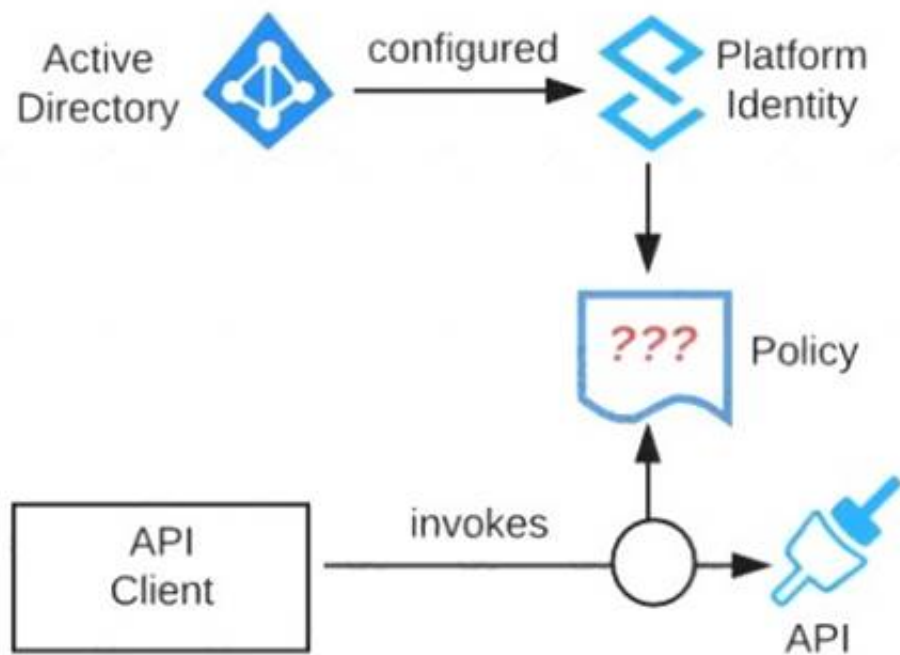
## Exam Questions MCPA-Level-1

MuleSoft Certified Platform Architect - Level 1



### NEW QUESTION 1

Refer to the exhibit. An organization is running a Mule standalone runtime and has configured Active Directory as the Anypoint Platform external Identity Provider. The organization does not have budget for other system components.



What policy should be applied to all instances of APIs in the organization to most effectively restrict access to a specific group of internal users?

- A. Apply a basic authentication - LDAP policy; the internal Active Directory will be configured as the LDAP source for authenticating users
- B. Apply a client ID enforcement policy; the specific group of users will configure their client applications to use their specific client credentials
- C. Apply an IP whitelist policy; only the specific users' workstations will be in the whitelist
- D. Apply an OAuth 2.0 access token enforcement policy; the internal Active Directory will be configured as the OAuth server

**Answer: A**

#### Explanation:

Correct Answer

Apply a basic authentication - LDAP policy; the internal Active Directory will be configured as the LDAP source for authenticating users.

\*\*\*\*\*

>> IP Whitelisting does NOT fit for this purpose. Moreover, the users workstations may not necessarily have static IPs in the network.

>> OAuth 2.0 enforcement requires a client provider which isn't in the organizations system components.

>> It is not an effective approach to let every user create separate client credentials and configure those for their usage.

The effective way it to apply a basic authentication - LDAP policy and the internal Active Directory will be configured as the LDAP source for authenticating users.

### NEW QUESTION 2

How are an API implementation, API client, and API consumer combined to invoke and process an API?

- A. The API consumer creates an API implementation, which receives API invocations from an API such that they are processed for an API client
- B. The API client creates an API consumer, which receives API invocations from an API such that they are processed for an API implementation
- C. The API consumer creates an API client, which sends API invocations to an API such that they are processed by an API implementation
- D. The API client creates an API consumer, which sends API invocations to an API such that they are processed by an API implementation

**Answer: C**

#### Explanation:

Correct Answer

The API consumer creates an API client, which sends API invocations to an API such that they are processed by an API implementation

\*\*\*\*\* Terminology:

>> API Client - It is a piece of code or program that is written to invoke an API

>> API Consumer - An owner/entity who owns the API Client. API Consumers write API clients.

>> API - The provider of the API functionality. Typically an API Instance on API Manager where they are managed and operated.

>> API Implementation - The actual piece of code written by API provider where the functionality of the API is implemented. Typically, these are Mule Applications running on Runtime Manager.

### NEW QUESTION 3

In which layer of API-led connectivity, does the business logic orchestration reside?

- A. System Layer
- B. Experience Layer
- C. Process Layer

**Answer: C**

#### Explanation:

Correct Answer

Process Layer

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>> Experience layer is dedicated for enrichment of end user experience. This layer is to meet the needs of different API clients/ consumers.

>> System layer is dedicated to APIs which are modular in nature and implement/ expose various individual functionalities of backend systems

>> Process layer is the place where simple or complex business orchestration logic is written by invoking one or many System layer modular APIs

So, Process Layer is the right answer.

#### NEW QUESTION 4

A retail company is using an Order API to accept new orders. The Order API uses a JMS queue to submit orders to a backend order management service. The normal load for orders is being handled using two (2) CloudHub workers, each configured with 0.2 vCore. The CPU load of each CloudHub worker normally runs well below 70%. However, several times during the year the Order API gets four times (4x) the average number of orders. This causes the CloudHub worker CPU load to exceed 90% and the order submission time to exceed 30 seconds. The cause, however, is NOT the backend order management service, which still responds fast enough to meet the response SLA for the Order API. What is the MOST resource-efficient way to configure the Mule application's CloudHub deployment to help the company cope with this performance challenge?

- A. Permanently increase the size of each of the two (2) CloudHub workers by at least four times (4x) to one(1) vCore
- B. Use a vertical CloudHub autoscaling policy that triggers on CPU utilization greater than 70%
- C. Permanently increase the number of CloudHub workers by four times (4x) to eight (8) CloudHub workers
- D. Use a horizontal CloudHub autoscaling policy that triggers on CPU utilization greater than 70%

**Answer: D**

#### Explanation:

Correct Answer

Use a horizontal CloudHub autoscaling policy that triggers on CPU utilization greater than 70%

\*\*\*\*\*

The scenario in the question is very clearly stating that the usual traffic in the year is pretty well handled by the existing worker configuration with CPU running well below 70%. The problem occurs only "sometimes" occasionally when there is spike in the number of orders coming in.

So, based on above, We neither need to permanently increase the size of each worker nor need to permanently increase the number of workers. This is unnecessary as other than those "occasional" times the resources are idle and wasted.

We have two options left now. Either to use horizontal Cloudhub autoscaling policy to automatically increase the number of workers or to use vertical Cloudhub autoscaling policy to automatically increase the vCore size of each worker.

Here, we need to take two things into consideration:

\* 1. CPU

\* 2. Order Submission Rate to JMS Queue

>> From CPU perspective, both the options (horizontal and vertical scaling) solves the issue. Both helps to bring down the usage below 90%.

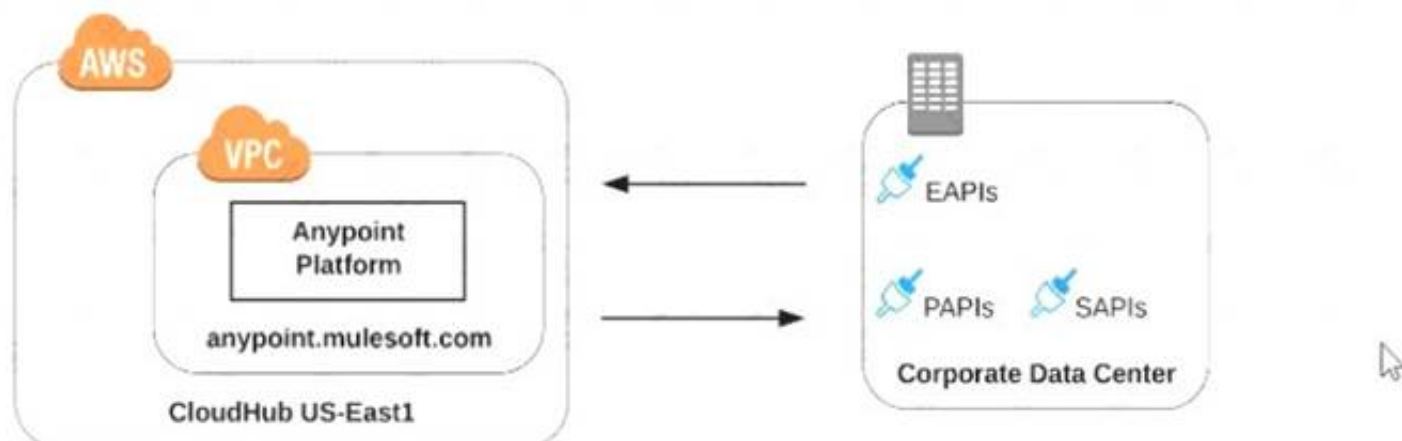
>> However, If we go with Vertical Scaling, then from Order Submission Rate perspective, as the application is still being load balanced with two workers only, there may not be much improvement in the incoming request processing rate and order submission rate to JMS queue. The throughput would be same as before. Only CPU utilization comes down.

>> But, if we go with Horizontal Scaling, it will spawn new workers and adds extra hand to increase the throughput as more workers are being load balanced now. This way we can address both CPU and Order Submission rate.

Hence, Horizontal CloudHub Autoscaling policy is the right and best answer.

#### NEW QUESTION 5

Refer to the exhibit.



what is true when using customer-hosted Mule runtimes with the MuleSoft-hosted Anypoint Platform control plane (hybrid deployment)?

- A. Anypoint Runtime Manager initiates a network connection to a Mule runtime in order to deploy Mule applications
- B. The MuleSoft-hosted Shared Load Balancer can be used to load balance API invocations to the Mule runtimes
- C. API implementations can run successfully in customer-hosted Mule runtimes, even when they are unable to communicate with the control plane
- D. Anypoint Runtime Manager automatically ensures HA in the control plane by creating a new Mule runtime instance in case of a node failure

**Answer: C**

#### Explanation:

Correct Answer

API implementations can run successfully in customer-hosted Mule runtimes, even when they are unable to communicate with the control plane.

\*\*\*\*\*

>> We CANNOT use Shared Load balancer to load balance APIs on customer hosted runtimes

◦ Load balancing

Load balancing is not provided for hybrid deployments. You can manage load balancing with the tools connected to your on-premises resources.

>> For Hybrid deployment models, the on-premises are first connected to Runtime Manager using Runtime Manager agent. So, the connection is initiated first from On-premises to Runtime Manager. Then all control can be done from Runtime Manager.

>> Anypoint Runtime Manager CANNOT ensure automatic HA. Clusters/Server Groups etc should be configured before hand.

Only TRUE statement in the given choices is, API implementations can run successfully in customer-hosted Mule runtimes, even when they are unable to

communicate with the control plane. There are several references below to justify this statement.

References:

<https://docs.mulesoft.com/runtime-manager/deployment-strategies#hybrid-deployments> <https://help.mulesoft.com/s/article/On-Premise-Runtimes-Disconnected-From-US-Control-Plane-June-18th-2018> <https://help.mulesoft.com/s/article/On-premise-Runtimes-Appear-Disconnected-in-Runtime-Manager-May-29th>

### On-Premise Runtimes Disconnected From US Control Plane - June 18th 2018

Jun 19, 2018 - RCA

#### Content

##### Impacted Platforms      Impacted Duration

Anypoint Runtime Manager / On-Prem Runtimes	During this time frame, on-prem runtimes appeared disconnected from the US Anypoint Control Plane:  June 18, 2018 10:35 AM PST to June 18, 2018 11:12 AM PST
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#### Incident Description

On-premises applications weren't able to connect to Anypoint Runtime Manager during the length of the incident, which made on-premises runtimes to throw errors in their logs because they received network disconnect messages from the control plane. Other than generating the log as mentioned above entries, on-premises runtimes and applications were not impacted.

### Runtime Manager cannot manage On-Prem Applications and Servers from US Control Plane - June 25th 2019

Jul 3, 2019 - RCA

#### Content

##### Incident Summary

Between 2:51 p.m. PT June 25th and 12:41 a.m. PT June 26th, customers were not able to manage their On-Prem applications and servers. The availability of running applications and runtimes were not impacted.

##### Impacted Platforms      Impact Duration

US-Prod	9 hours and 50 minutes
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### On-premise Runtimes Appear Disconnected in Runtime Manager - May 29th 2018

Jun 2, 2018 - RCA

#### Content

##### Impacted Platforms      Impacted Duration

Anypoint Runtime Manager / On-Prem Runtimes	During this time frame, on-prem runtimes appeared disconnected from the US Anypoint Control Plane:  Tuesday, May 29, 2018, 3:35 AM PDT to 4:27 AM PDT
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#### Incident Description

During the incident time frame, managed Runtimes running on-premises disconnected from the US Anypoint Platform Control Plane and may have encountered recurrent re-connection errors. Customers were unable to manage applications running on those runtimes or register new ones during this time. Runtimes and Applications continued to operate without impact.

#### NEW QUESTION 6

What is most likely NOT a characteristic of an integration test for a REST API implementation?



- A. The test needs all source and/or target systems configured and accessible
- B. The test runs immediately after the Mule application has been compiled and packaged
- C. The test is triggered by an external HTTP request
- D. The test prepares a known request payload and validates the response payload

**Answer: B**

**Explanation:**

Correct Answer

The test runs immediately after the Mule application has been compiled and packaged

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>> Integration tests are the last layer of tests we need to add to be fully covered.

>> These tests actually run against Mule running with your full configuration in place and are tested from external source as they work in PROD.

>> These tests exercise the application as a whole with actual transports enabled. So, external systems are affected when these tests run.

So, these tests do NOT run immediately after the Mule application has been compiled and packaged.

FYI... Unit Tests are the one that run immediately after the Mule application has been compiled and packaged.

#### NEW QUESTION 7

Which of the following best fits the definition of API-led connectivity?

- A. API-led connectivity is not just an architecture or technology but also a way to organize people and processes for efficient IT delivery in the organization
- B. API-led connectivity is a 3-layered architecture covering Experience, Process and System layers
- C. API-led connectivity is a technology which enabled us to implement Experience, Process and System layer based APIs

**Answer: A**

**Explanation:**

Correct Answer

API-led connectivity is not just an architecture or technology but also a way to organize people and processes for efficient IT delivery in the organization.

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#### NEW QUESTION 8

What are the major benefits of MuleSoft proposed IT Operating Model?

- A. \* 1. Decrease the IT delivery gap\* 2. Meet various business demands without increasing the IT capacity\* 3. Focus on creation of reusable assets first
- B. Upon finishing creation of all the possible assets then inform the LOBs in the organization to start using them
- C. \* 1. Decrease the IT delivery gap\* 2. Meet various business demands by increasing the IT capacity and forming various IT departments\* 3. Make consumption of assets at the rate of production
- D. \* 1. Decrease the IT delivery gap\* 2. Meet various business demands without increasing the IT capacity\* 3. Make consumption of assets at the rate of production

**Answer: C**

**Explanation:**

Correct Answer

\* 1. Decrease the IT delivery gap

\* 2. Meet various business demands without increasing the IT capacity

\* 3. Make consumption of assets at the rate of production.

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#### NEW QUESTION 9

A code-centric API documentation environment should allow API consumers to investigate and execute API client source code that demonstrates invoking one or more APIs as part of representative scenarios.

What is the most effective way to provide this type of code-centric API documentation environment using Anypoint Platform?

- A. Enable mocking services for each of the relevant APIs and expose them via their Anypoint Exchange entry
- B. Ensure the APIs are well documented through their Anypoint Exchange entries and API Consoles and share these pages with all API consumers
- C. Create API Notebooks and include them in the relevant Anypoint Exchange entries
- D. Make relevant APIs discoverable via an Anypoint Exchange entry

**Answer: C**

**Explanation:**

Correct Answer

Create API Notebooks and Include them in the relevant Anypoint exchange entries

\*\*\*\*\*

>> API Notebooks are the one on Anypoint Platform that enable us to provide code-centric API documentation

#### NEW QUESTION 10

A company uses a hybrid Anypoint Platform deployment model that combines the EU control plane with customer-hosted Mule runtimes. After successfully testing a Mule API implementation in the Staging environment, the Mule API implementation is set with environment-specific properties and must be promoted to the Production environment. What is a way that MuleSoft recommends to configure the Mule API implementation and automate its promotion to the Production environment?

- A. Bundle properties files for each environment into the Mule API implementation's deployable archive, then promote the Mule API implementation to the

Production environment using Anypoint CLI or the Anypoint Platform REST APIsB.

B. Modify the Mule API implementation's properties in the API Manager Properties tab, then promote the Mule API implementation to the Production environment using API Manager

C. Modify the Mule API implementation's properties in Anypoint Exchange, then promote the Mule API implementation to the Production environment using Runtime Manager

D. Use an API policy to change properties in the Mule API implementation deployed to the Staging environment and another API policy to deploy the Mule API implementation to the Production environment

**Answer:** A

**Explanation:**

Correct Answer

Bundle properties files for each environment into the Mule API implementation's deployable archive, then promote the Mule API implementation to the Production environment using Anypoint CLI or the Anypoint Platform REST APIs

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>> Anypoint Exchange is for asset discovery and documentation. It has got no provision to modify the properties of Mule API implementations at all.

>> API Manager is for managing API instances, their contracts, policies and SLAs. It has also got no provision to modify the properties of API implementations.

>> API policies are to address Non-functional requirements of APIs and has again got no provision to modify the properties of API implementations.

So, the right way and recommended way to do this as part of development practice is to bundle properties files for each environment into the Mule API implementation and just point and refer to respective file per environment.

#### NEW QUESTION 10

How can the application of a rate limiting API policy be accurately reflected in the RAML definition of an API?

A. By refining the resource definitions by adding a description of the rate limiting policy behavior

B. By refining the request definitions by adding a remaining Requests query parameter with description, type, and example

C. By refining the response definitions by adding the out-of-the-box Anypoint Platform rate-limit-enforcement securityScheme with description, type, and example

D. By refining the response definitions by adding the x-ratelimit-\* response headers with description, type, and example

**Answer:** D

**Explanation:**

Correct Answer

By refining the response definitions by adding the x-ratelimit-\* response headers with description, type, and example

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## Response Headers

The following access-limiting policies return headers having information about the current state of the request:

- X-Ratelimit-Remaining: The amount of available quota.
- X-Ratelimit-Limit: The maximum available requests per window.
- X-Ratelimit-Reset: The remaining time, in milliseconds, until a new window starts.

## Response Headers

Three headers are included in request responses that inform users about the SLA restrictions and inform them when nearing the threshold.

When the SLA enforces multiple policies that limit request throughput, a single set of headers pertaining to the most restrictive of the policies provides this information.

For example, a user of your API may receive a response that includes these headers:

```
X-RateLimit-Limit: 20
X-RateLimit-Remaining: 14
X-RateLimit-Reset: 19100
```

Within the next 19100 milliseconds, only 14 more requests are allowed by the SLA, which is set to allow 20 within this time-window.

References:

<https://docs.mulesoft.com/api-manager/2.x/rate-limiting-and-throttling#response-headers> <https://docs.mulesoft.com/api-manager/2.x/rate-limiting-and-throttling-sla-based-policies#response-headers>

#### NEW QUESTION 13

In an organization, the InfoSec team is investigating Anypoint Platform related data traffic.

From where does most of the data available to Anypoint Platform for monitoring and alerting originate?

A. From the Mule runtime or the API implementation, depending on the deployment model

B. From various components of Anypoint Platform, such as the Shared Load Balancer, VPC, and Mule runtimes

C. From the Mule runtime or the API Manager, depending on the type of data

D. From the Mule runtime irrespective of the deployment model

**Answer:** D

**Explanation:**

Correct Answer

From the Mule runtime irrespective of the deployment model

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>> Monitoring and Alerting metrics are always originated from Mule Runtimes irrespective of the deployment model.

>> It may seem that some metrics (Runtime Manager) are originated from Mule Runtime and some are (API Invocations/ API Analytics) from API Manager. However, this is realistically NOT TRUE. The reason is, API manager is just a management tool for API instances but all policies upon applying on APIs eventually gets executed on Mule Runtimes only (Either Embedded or API Proxy).

>> Similarly all API Implementations also run on Mule Runtimes.

So, most of the day required for monitoring and alerts are originated from Mule Runtimes only irrespective of whether the deployment model is MuleSoft-hosted or Customer-hosted or Hybrid.

#### NEW QUESTION 15

An API client calls one method from an existing API implementation. The API implementation is later updated. What change to the API implementation would require the API client's invocation logic to also be updated?

- A. When the data type of the response is changed for the method called by the API client
- B. When a new method is added to the resource used by the API client
- C. When a new required field is added to the method called by the API client
- D. When a child method is added to the method called by the API client

**Answer: C**

**Explanation:**

Correct Answer

When a new required field is added to the method called by the API client

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>> Generally, the logic on API clients need to be updated when the API contract breaks.

>> When a new method or a child method is added to an API, the API client does not break as it can still continue to use its existing method. So these two options are out.

>> We are left for two more where "datatype of the response is changed" and "a new required field is added".

>> Changing the datatype of the response does break the API contract. However, the question is insisting on the "invocation" logic and not about the response handling logic. The API client can still invoke the API successfully and receive the response but the response will have a different datatype for some field.

>> Adding a new required field will break the API's invocation contract. When adding a new required field, the API contract breaks the RAML or API spec agreement that the API client/API consumer and API provider has between them. So this requires the API client invocation logic to also be updated.

#### NEW QUESTION 16

An API experiences a high rate of client requests (TPS) with small message payloads. How can usage limits be imposed on the API based on the type of client application?

- A. Use an SLA-based rate limiting policy and assign a client application to a matching SLA tier based on its type
- B. Use a spike control policy that limits the number of requests for each client application type
- C. Use a cross-origin resource sharing (CORS) policy to limit resource sharing between client applications, configured by the client application type
- D. Use a rate limiting policy and a client ID enforcement policy, each configured by the client application type

**Answer: A**

**Explanation:**

Correct Answer

Use an SLA-based rate limiting policy and assign a client application to a matching SLA tier based on its type.

\*\*\*\*\*

>> SLA tiers will come into play whenever any limits to be imposed on APIs based on client type

#### NEW QUESTION 20

When using CloudHub with the Shared Load Balancer, what is managed EXCLUSIVELY by the API implementation (the Mule application) and NOT by Anypoint Platform?

- A. The assignment of each HTTP request to a particular CloudHub worker
- B. The logging configuration that enables log entries to be visible in Runtime Manager
- C. The SSL certificates used by the API implementation to expose HTTPS endpoints
- D. The number of DNS entries allocated to the API implementation

**Answer: C**

**Explanation:**

Correct Answer

The SSL certificates used by the API implementation to expose HTTPS endpoints

\*\*\*\*\*

>> The assignment of each HTTP request to a particular CloudHub worker is taken care by Anypoint Platform itself. We need not manage it explicitly in the API implementation and in fact we CANNOT manage it in the API implementation.

>> The logging configuration that enables log entries to be visible in Runtime Manager is ALWAYS managed in the API implementation and NOT just for SLB. So this is not something we do EXCLUSIVELY when using SLB.

>> We DO NOT manage the number of DNS entries allocated to the API implementation inside the code. Anypoint Platform takes care of this.

It is the SSL certificates used by the API implementation to expose HTTPS endpoints that is to be managed EXCLUSIVELY by the API implementation. Anypoint Platform does NOT do this when using SLBs.

#### NEW QUESTION 23

What Mule application deployment scenario requires using Anypoint Platform Private Cloud Edition or Anypoint Platform for Pivotal Cloud Foundry?



- A. When it is required to make ALL applications highly available across multiple data centers
- B. When it is required that ALL APIs are private and NOT exposed to the public cloud
- C. When regulatory requirements mandate on-premises processing of EVERY data item, including meta-data
- D. When ALL backend systems in the application network are deployed in the organization's intranet

**Answer: C**

**Explanation:**

Correct Answer

When regulatory requirements mandate on-premises processing of EVERY data item, including meta-data.

\*\*\*\*\*

We need NOT require to use Anypoint Platform PCE or PCF for the below. So these options are OUT.

>> We can make ALL applications highly available across multiple data centers using CloudHub too.

>> We can use Anypoint VPN and tunneling from CloudHub to connect to ALL backend systems in the application network that are deployed in the organization's intranet.

>> We can use Anypoint VPC and Firewall Rules to make ALL APIs private and NOT exposed to the public cloud.

Only valid reason in the given options that requires to use Anypoint Platform PCE/ PCF is - When regulatory requirements mandate on-premises processing of EVERY data item, including meta-data.

**NEW QUESTION 24**

When could the API data model of a System API reasonably mimic the data model exposed by the corresponding backend system, with minimal improvements over the backend system's data model?

- A. When there is an existing Enterprise Data Model widely used across the organization
- B. When the System API can be assigned to a bounded context with a corresponding data model
- C. When a pragmatic approach with only limited isolation from the backend system is deemed appropriate
- D. When the corresponding backend system is expected to be replaced in the near future

**Answer: C**

**Explanation:**

Correct Answer

When a pragmatic approach with only limited isolation from the backend system is deemed appropriate.

\*\*\*\*\* General guidance w.r.t choosing Data Models:

>> If an Enterprise Data Model is in use then the API data model of System APIs should make use of data types from that Enterprise Data Model and the corresponding API implementation should translate between these data types from the Enterprise Data Model and the native data model of the backend system.

>> If no Enterprise Data Model is in use then each System API should be assigned to a Bounded Context, the API data model of System APIs should make use of data types from the corresponding Bounded Context Data Model and the corresponding API implementation should translate between these data types from the Bounded Context Data Model and the native data model of the backend system. In this scenario, the data types in the Bounded Context Data Model are defined purely in terms of their business characteristics and are typically not related to the native data model of the backend system. In other words, the translation effort may be significant.

>> If no Enterprise Data Model is in use, and the definition of a clean Bounded Context Data Model is considered too much effort, then the API data model of System APIs should make use of data types that approximately mirror those from the backend system, same semantics and naming as backend system, lightly sanitized, expose all fields needed for the given System API's functionality, but not significantly more and making good use of REST conventions.

The latter approach, i.e., exposing in System APIs an API data model that basically mirrors that of the backend system, does not provide satisfactory isolation from backend systems through the System API tier on its own. In particular, it will typically not be possible to "swap out" a backend system without significantly changing all System APIs in front of that backend system and therefore the API implementations of all Process APIs that depend on those System APIs! This is so because it is not desirable to prolong the life of a previous backend system's data model in the form of the API data model of System APIs that now front a new backend system. The API data models of System APIs following this approach must therefore change when the backend system is replaced.

On the other hand:

>> It is a very pragmatic approach that adds comparatively little overhead over accessing the backend system directly

>> Isolates API clients from intricacies of the backend system outside the data model (protocol, authentication, connection pooling, network address, ...)

>> Allows the usual API policies to be applied to System APIs

>> Makes the API data model for interacting with the backend system explicit and visible, by exposing it in the RAML definitions of the System APIs

>> Further isolation from the backend system data model does occur in the API implementations of the Process API tier

**NEW QUESTION 27**

When designing an upstream API and its implementation, the development team has been advised to NOT set timeouts when invoking a downstream API, because that downstream API has no SLA that can be relied upon. This is the only downstream API dependency of that upstream API.

Assume the downstream API runs uninterrupted without crashing. What is the impact of this advice?

- A. An SLA for the upstream API CANNOT be provided
- B. The invocation of the downstream API will run to completion without timing out
- C. A default timeout of 500 ms will automatically be applied by the Mule runtime in which the upstream API implementation executes
- D. A load-dependent timeout of less than 1000 ms will be applied by the Mule runtime in which the downstream API implementation executes

**Answer: A**

**Explanation:**

Correct Answer

An SLA for the upstream API CANNOT be provided.

\*\*\*\*\*

>> First thing first, the default HTTP response timeout for HTTP connector is 10000 ms (10 seconds). NOT 500 ms.

>> Mule runtime does NOT apply any such "load-dependent" timeouts. There is no such behavior currently in Mule.

>> As there is default 10000 ms time out for HTTP connector, we CANNOT always guarantee that the invocation of the downstream API will run to completion without timing out due to its unreliable SLA times. If the response time crosses 10 seconds then the request may time out.

The main impact due to this is that a proper SLA for the upstream API CANNOT be provided.



#### NEW QUESTION 28

An API has been updated in Anypoint Exchange by its API producer from version 3.1.1 to 3.2.0 following accepted semantic versioning practices and the changes have been communicated via the API's public portal.  
The API endpoint does NOT change in the new version.  
How should the developer of an API client respond to this change?

- A. The update should be identified as a project risk and full regression testing of the functionality that uses this API should be run
- B. The API producer should be contacted to understand the change to existing functionality
- C. The API producer should be requested to run the old version in parallel with the new one
- D. The API client code ONLY needs to be changed if it needs to take advantage of new features

**Answer: D**

#### NEW QUESTION 33

What is a key performance indicator (KPI) that measures the success of a typical C4E that is immediately apparent in responses from the Anypoint Platform APIs?

- A. The number of production outage incidents reported in the last 24 hours
- B. The number of API implementations that have a publicly accessible HTTP endpoint and are being managed by Anypoint Platform
- C. The fraction of API implementations deployed manually relative to those deployed using a CI/CD tool
- D. The number of API specifications in RAML or OAS format published to Anypoint Exchange

**Answer: D**

#### Explanation:

Correct Answer

The number of API specifications in RAML or OAS format published to Anypoint Exchange

\*\*\*\*\*

>> The success of C4E always depends on their contribution to the number of reusable assets that they have helped to build and publish to Anypoint Exchange.  
>> It is NOT due to any factors w.r.t # of outages, Manual vs CI/CD deployments or Publicly accessible HTTP endpoints  
>> Anypoint Platform APIs helps us to quickly run and get the number of published RAML/OAS assets to Anypoint Exchange. This clearly depicts how successful a C4E team is based on number of returned assets in the response.

#### NEW QUESTION 36

What is true about automating interactions with Anypoint Platform using tools such as Anypoint Platform REST APIs, Anypoint CU, or the Mule Maven plugin?

- A. Access to Anypoint Platform APIs and Anypoint CU can be controlled separately through the roles and permissions in Anypoint Platform, so that specific users can get access to Anypoint CLI while others get access to the platform APIs
- B. Anypoint Platform APIs can ONLY automate interactions with CloudHub, while the Mule Maven plugin is required for deployment to customer-hosted Mule runtimes
- C. By default, the Anypoint CLI and Mule Maven plugin are NOT included in the Mule runtime, so are NOT available to be used by deployed Mule applications
- D. API policies can be applied to the Anypoint Platform APIs so that ONLY certain LOBs have access to specific functions

**Answer: C**

#### Explanation:

Correct Answer

By default, the Anypoint CLI and Mule Maven plugin are NOT included in the Mule runtime, so are NOT available to be used by deployed Mule applications

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>> We CANNOT apply API policies to the Anypoint Platform APIs like we can do on our custom written API instances. So, option suggesting this is FALSE.  
>> Anypoint Platform APIs can be used for automating interactions with both CloudHub and customer-hosted Mule runtimes. Not JUST the CloudHub. So, option opposing this is FALSE.  
>> Mule Maven plugin is NOT mandatory for deployment to customer-hosted Mule runtimes. It just helps your CI/CD to have smoother automation. But not a compulsory requirement to deploy. So, option opposing this is FALSE.  
>> We DO NOT have any such special roles and permissions on the platform to separately control access for some users to have Anypoint CLI and others to have Anypoint Platform APIs. With proper general roles/permissions (API Owner, Cloudhub Admin etc..), one can use any of the options (Anypoint CLI or Platform APIs). So, option suggesting this is FALSE.  
Only TRUE statement given in the choices is that - Anypoint CLI and Mule Maven plugin are NOT included in the Mule runtime, so are NOT available to be used by deployed Mule applications.  
Maven is part of Studio or you can use other Maven installation for development. CLI is convenience only. It is one of many ways how to install app to the runtime. These are definitely NOT part of anything except your process of deployment or automation.

#### NEW QUESTION 39

What is a key requirement when using an external Identity Provider for Client Management in Anypoint Platform?

- A. Single sign-on is required to sign in to Anypoint Platform
- B. The application network must include System APIs that interact with the Identity Provider
- C. To invoke OAuth 2.0-protected APIs managed by Anypoint Platform, API clients must submit access tokens issued by that same Identity Provider
- D. APIs managed by Anypoint Platform must be protected by SAML 2.0 policies

**Answer: C**

#### Explanation:

<https://www.folkstalk.com/2019/11/mulesoft-integration-and-platform.html>

Correct Answer

To invoke OAuth 2.0-protected APIs managed by Anypoint Platform, API clients must submit access tokens issued by that same Identity Provider

\*\*\*\*\*

>> It is NOT necessary that single sign-on is required to sign in to Anypoint Platform because we are using an external Identity Provider for Client Management  
>> It is NOT necessary that all APIs managed by Anypoint Platform must be protected by SAML 2.0 policies because we are using an external Identity Provider for Client Management

>> Not TRUE that the application network must include System APIs that interact with the Identity Provider because we are using an external Identity Provider for Client Management  
 Only TRUE statement in the given options is - "To invoke OAuth 2.0-protected APIs managed by Anypoint Platform, API clients must submit access tokens issued by that same Identity Provider"  
 References:  
<https://docs.mulesoft.com/api-manager/2.x/external-oauth-2.0-token-validation-policy> <https://blogs.mulesoft.com/dev/api-dev/api-security-ways-to-authenticate-and-authorize/>

#### NEW QUESTION 42

Once an API Implementation is ready and the API is registered on API Manager, who should request the access to the API on Anypoint Exchange?

- A. None
- B. Both
- C. API Client
- D. API Consumer

**Answer: D**

#### Explanation:

Correct Answer  
 API Consumer

\*\*\*\*\*

>> API clients are piece of code or programs that use the client credentials of API consumer but does not directly interact with Anypoint Exchange to get the access  
 >> API consumer is the one who should get registered and request access to API and then API client needs to use those client credentials to hit the APIs  
 So, API consumer is the one who needs to request access on the API from Anypoint Exchange

#### NEW QUESTION 46

What is typically NOT a function of the APIs created within the framework called API-led connectivity?

- A. They provide an additional layer of resilience on top of the underlying backend system, thereby insulating clients from extended failure of these systems.
- B. They allow for innovation at the user Interface level by consuming the underlying assets without being aware of how data is being extracted from backend systems.
- C. They reduce the dependency on the underlying backend systems by helping unlock data from backend systems in a reusable and consumable way.
- D. They can compose data from various sources and combine them with orchestration logic to create higher level value.

**Answer: A**

#### Explanation:

Correct Answer

They provide an additional layer of resilience on top of the underlying backend system, thereby insulating clients from extended failure of these systems.

\*\*\*\*\* In API-led connectivity,

>> Experience APIs - allow for innovation at the user interface level by consuming the underlying assets without being aware of how data is being extracted from backend systems.

>> Process APIs - compose data from various sources and combine them with orchestration logic to create higher level value

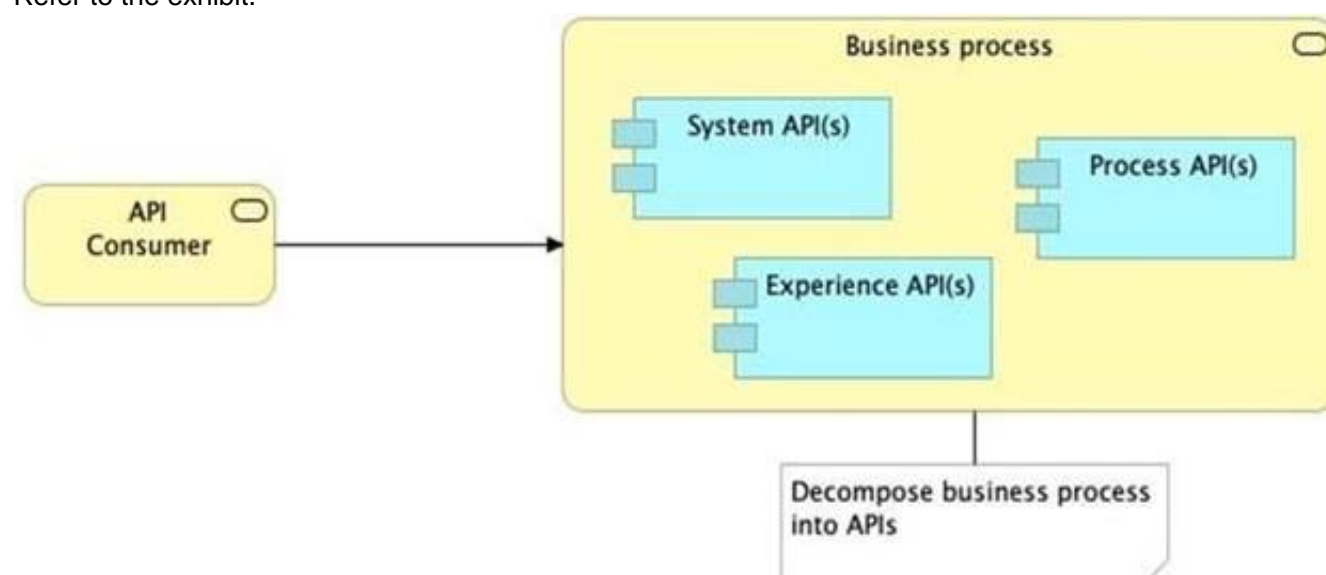
>> System APIs - reduce the dependency on the underlying backend systems by helping unlock data from backend systems in a reusable and consumable way.

However, they NEVER promise that they provide an additional layer of resilience on top of the underlying backend system, thereby insulating clients from extended failure of these systems.

<https://dzone.com/articles/api-led-connectivity-with-mule>

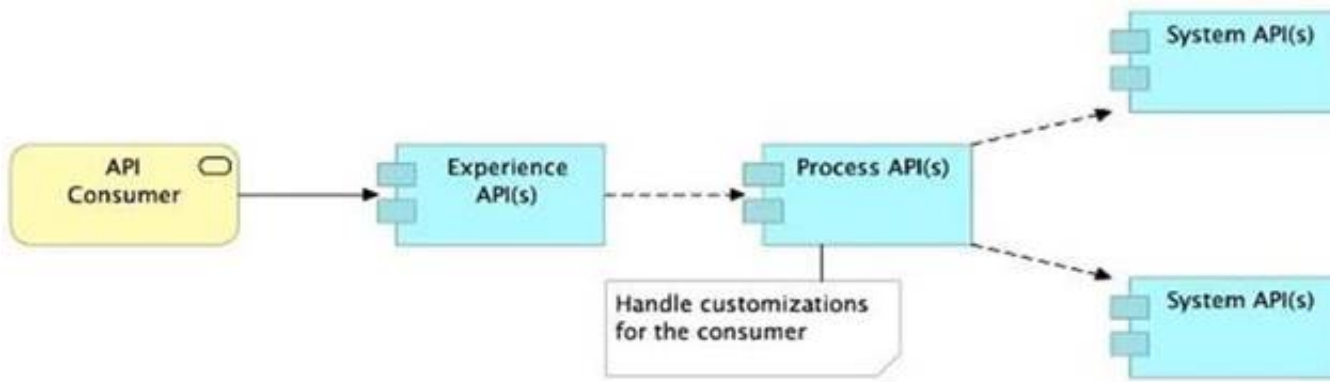
#### NEW QUESTION 50

Refer to the exhibit.

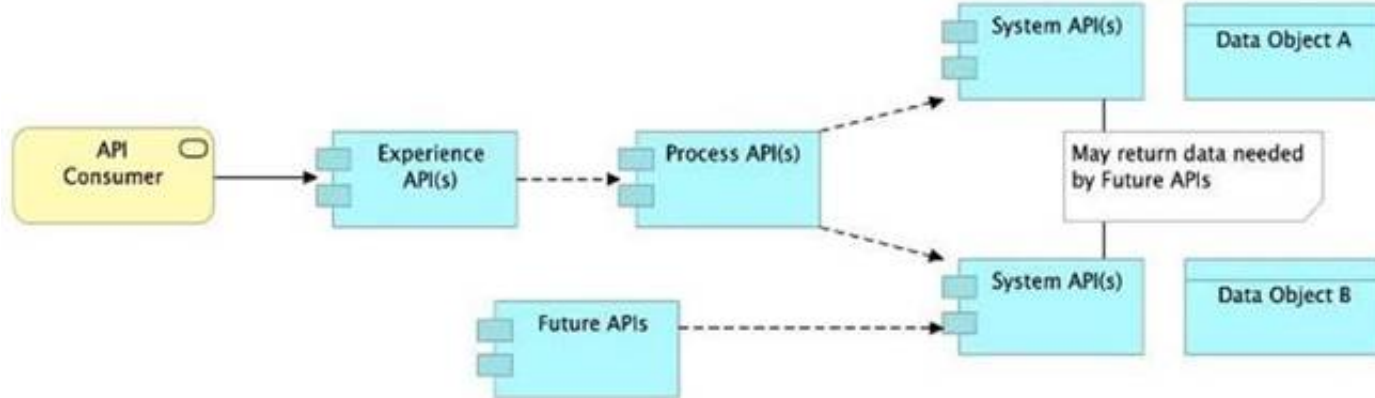


What is the best way to decompose one end-to-end business process into a collaboration of Experience, Process, and System APIs?

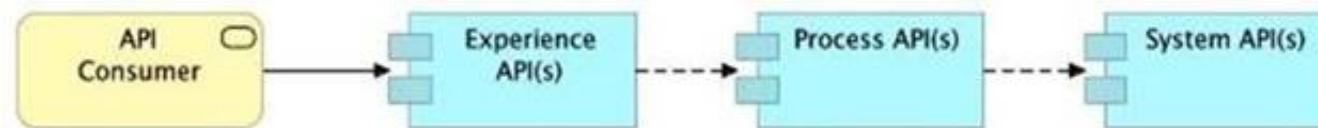
- A) Handle customizations for the end-user application at the Process API level rather than the Experience API level



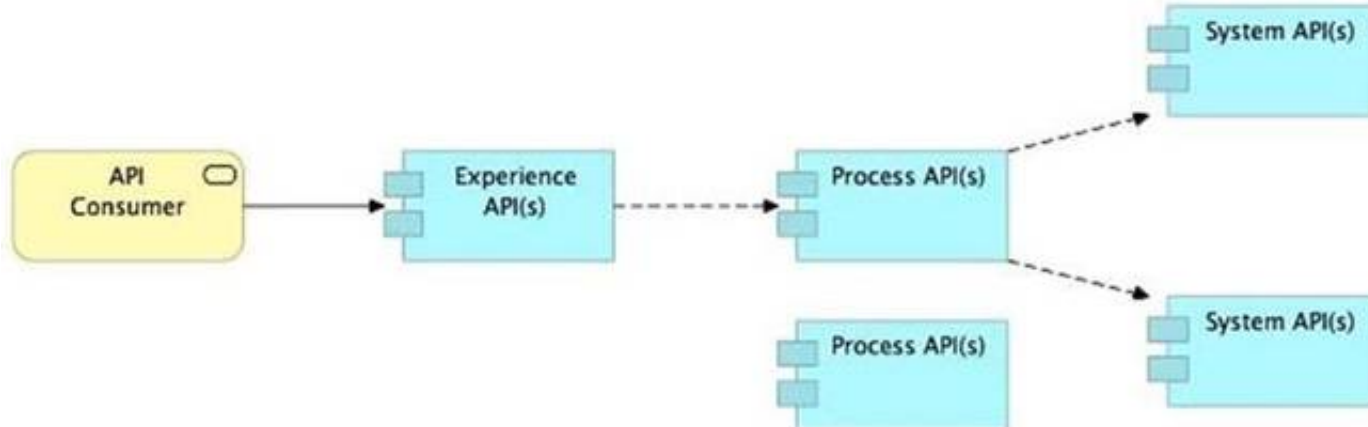
B) Allow System APIs to return data that is NOT currently required by the identified Process or Experience APIs



C) Always use a tiered approach by creating exactly one API for each of the 3 layers (Experience, Process and System APIs)



D) Use a Process API to orchestrate calls to multiple System APIs, but NOT to other Process APIs



- A. Option A
- B. Option B
- C. Option C
- D. Option D

**Answer: B**

**Explanation:**

Correct Answer

Allow System APIs to return data that is NOT currently required by the identified Process or Experience APIs.

\*\*\*\*\*

>> All customizations for the end-user application should be handled in "Experience API" only. Not in Process API

>> We should use tiered approach but NOT always by creating exactly one API for each of the 3 layers. Experience APIs might be one but Process APIs and System APIs are often more than one. System APIs for sure will be more than one all the time as they are the smallest modular APIs built in front of end systems.  
 >> Process APIs can call System APIs as well as other Process APIs. There is no such anti-design pattern in API-Led connectivity saying Process APIs should not call other Process APIs.

So, the right answer in the given set of options that makes sense as per API-Led connectivity principles is to allow System APIs to return data that is NOT currently required by the identified Process or Experience APIs. This way, some future Process APIs can make use of that data from System APIs and we need NOT touch the System layer APIs again and again.

#### NEW QUESTION 51

Version 3.0.1 of a REST API implementation represents time values in PST time using ISO 8601 hh:mm:ss format. The API implementation needs to be changed to instead represent time values in CEST time using ISO 8601 hh:mm:ss format. When following the semver.org semantic versioning specification, what version should be assigned to the updated API implementation?

- A. 3.0.2
- B. 4.0.0
- C. 3.1.0
- D. 3.0.1

**Answer: B**

**Explanation:**

Correct Answer 4.0.0

\*\*\*\*\* As per semver.org semantic versioning specification:

Given a version number MAJOR.MINOR.PATCH, increment the:

- MAJOR version when you make incompatible API changes.
- MINOR version when you add functionality in a backwards compatible manner.
- PATCH version when you make backwards compatible bug fixes.

As per the scenario given in the question, the API implementation is completely changing its behavior. Although the format of the time is still being maintained as hh:mm:ss and there is no change in schema w.r.t format, the API will start functioning different after this change as the times are going to come completely different.

Example: Before the change, say, time is going as 09:00:00 representing the PST. Now on, after the change, the same time will go as 18:00:00 as Central European Summer Time is 9 hours ahead of Pacific Time.

>> This may lead to some uncertain behavior on API clients depending on how they are handling the times in the API response. All the API clients need to be informed that the API functionality is going to change and will return in CEST format. So, this considered as a MAJOR change and the version of API for this new change would be 4.0.0

#### NEW QUESTION 55

An organization has several APIs that accept JSON data over HTTP POST. The APIs are all publicly available and are associated with several mobile applications and web applications.

The organization does NOT want to use any authentication or compliance policies for these APIs, but at the same time, is worried that some bad actor could send payloads that could somehow compromise the applications or servers running the API implementations.

What out-of-the-box Anypoint Platform policy can address exposure to this threat?

- A. Shut out bad actors by using HTTPS mutual authentication for all API invocations
- B. Apply an IP blacklist policy to all APIs; the blacklist will include all bad actors
- C. Apply a Header injection and removal policy that detects the malicious data before it is used
- D. Apply a JSON threat protection policy to all APIs to detect potential threat vectors

**Answer: D**

#### Explanation:

Correct Answer

Apply a JSON threat protection policy to all APIs to detect potential threat vectors

\*\*\*\*\*

>> Usually, if the APIs are designed and developed for specific consumers (known consumers/customers) then we would IP Whitelist the same to ensure that traffic only comes from them.

>> However, as this scenario states that the APIs are publicly available and being used by so many mobile and web applications, it is NOT possible to identify and blacklist all possible bad actors.

>> So, JSON threat protection policy is the best chance to prevent any bad JSON payloads from such bad actors.

#### NEW QUESTION 58

Select the correct Owner-Layer combinations from below options

- A. \* 1. App Developers owns and focuses on Experience Layer APIs\* 2. Central IT owns and focuses on Process Layer APIs\* 3. LOB IT owns and focuses on System Layer APIs
- B. \* 1. Central IT owns and focuses on Experience Layer APIs\* 2. LOB IT owns and focuses on Process Layer APIs\* 3. App Developers owns and focuses on System Layer APIs
- C. \* 1. App Developers owns and focuses on Experience Layer APIs\* 2. LOB IT owns and focuses on Process Layer APIs\* 3. Central IT owns and focuses on System Layer APIs

**Answer: C**

#### Explanation:

Correct Answer

\* 1. App Developers owns and focuses on Experience Layer APIs

\* 2. LOB IT owns and focuses on Process Layer APIs

\* 3. Central IT owns and focuses on System Layer APIs

References:

<https://blogs.mulesoft.com/biz/api/experience-api-ownership/> <https://blogs.mulesoft.com/biz/api/process-api-ownership/> <https://blogs.mulesoft.com/biz/api/system-api-ownership/>

#### NEW QUESTION 63

A company has started to create an application network and is now planning to implement a Center for Enablement (C4E) organizational model. What key factor would lead the company to decide upon a federated rather than a centralized C4E?

- A. When there are a large number of existing common assets shared by development teams
- B. When various teams responsible for creating APIs are new to integration and hence need extensive training
- C. When development is already organized into several independent initiatives or groups
- D. When the majority of the applications in the application network are cloud based

**Answer: C**

#### Explanation:

Correct Answer

When development is already organized into several independent initiatives or groups

\*\*\*\*\*

>> It would require lot of process effort in an organization to have a single C4E team coordinating with multiple already organized development teams which are into several independent initiatives. A single C4E works well with different teams having at least a common initiative. So, in this scenario, federated C4E works well instead of centralized C4E.



#### NEW QUESTION 67

The application network is recomposable: it is built for change because it "bends but does not break"

- A. TRUE
- B. FALSE

**Answer:** A

#### Explanation:

\*\*\*\*\*

>> Application Network is a disposable architecture.  
>> Which means, it can be altered without disturbing entire architecture and its components.  
>> It bends as per requirements or design changes but does not break

#### NEW QUESTION 69

A company wants to move its Mule API implementations into production as quickly as possible. To protect access to all Mule application data and metadata, the company requires that all Mule applications be deployed to the company's customer-hosted infrastructure within the corporate firewall. What combination of runtime plane and control plane options meets these project lifecycle goals?

- A. Manually provisioned customer-hosted runtime plane and customer-hosted control plane
- B. MuleSoft-hosted runtime plane and customer-hosted control plane
- C. Manually provisioned customer-hosted runtime plane and MuleSoft-hosted control plane
- D. iPaaS provisioned customer-hosted runtime plane and MuleSoft-hosted control plane

**Answer:** A

#### Explanation:

Correct Answer

Manually provisioned customer-hosted runtime plane and customer-hosted control plane

\*\*\*\*\*

There are two key factors that are to be taken into consideration from the scenario given in the question.

>> Company requires both data and metadata to be resided within the corporate firewall

>> Company would like to go with customer-hosted infrastructure.

Any deployment model that is to deal with the cloud directly or indirectly (Mulesoft-hosted or Customer's own cloud like Azure, AWS) will have to share at least the metadata.

Application data can be controlled inside firewall by having Mule Runtimes on customer hosted runtime plane. But if we go with Mulesoft-hosted/ Cloud-based control plane, the control plane requires at least some minimum level of metadata to be sent outside the corporate firewall.

As the customer requirement is pretty clear about the data and metadata both to be within the corporate firewall, even though customer wants to move to production as quickly as possible, unfortunately due to the nature of their security requirements, they have no other option but to go with manually provisioned customer-hosted runtime plane and customer-hosted control plane.

#### NEW QUESTION 71

An organization makes a strategic decision to move towards an IT operating model that emphasizes consumption of reusable IT assets using modern APIs (as defined by MuleSoft).

What best describes each modern API in relation to this new IT operating model?

- A. Each modern API has its own software development lifecycle, which reduces the need for documentation and automation
- B. Each modern API must be treated like a product and designed for a particular target audience (for instance, mobile app developers)
- C. Each modern API must be easy to consume, so should avoid complex authentication mechanisms such as SAML or JWT
- D. Each modern API must be REST and HTTP based

**Answer:** B

#### Explanation:

Correct Answers

\* 1. Each modern API must be treated like a product and designed for a particular target audience (for instance mobile app developers)

\*\*\*\*\*

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#### NEW QUESTION 73

A company requires Mule applications deployed to CloudHub to be isolated between non-production and production environments. This is so Mule applications deployed to non-production environments can only access backend systems running in their customer-hosted non-production environment, and so Mule applications deployed to production environments can only access backend systems running in their customer-hosted production environment. How does MuleSoft recommend modifying Mule applications, configuring environments, or changing infrastructure to support this type of per-environment isolation between Mule applications and backend systems?

- A. Modify properties of Mule applications deployed to the production Anypoint Platform environments to prevent access from non-production Mule applications
- B. Configure firewall rules in the infrastructure inside each customer-hosted environment so that only IP addresses from the corresponding Anypoint Platform environments are allowed to communicate with corresponding backend systems
- C. Create non-production and production environments in different Anypoint Platform business groups
- D. Create separate Anypoint VPCs for non-production and production environments, then configure connections to the backend systems in the corresponding customer-hosted environments

**Answer:** D

#### Explanation:

Correct Answer

Create separate Anypoint VPCs for non-production and production environments, then configure connections to the backend systems in the corresponding customer-hosted environments.

\*\*\*\*\*

>> Creating different Business Groups does NOT make any difference w.r.t accessing the non-prod and prod customer-hosted environments. Still they will be accessing from both Business Groups unless process network restrictions are put in place.

>> We need to modify or couple the Mule Application Implementations with the environment. In fact, we should never implements application coupled with environments by binding them in the properties. Only basic things like endpoint URL etc should be bundled in properties but not environment level access restrictions.

>> IP addresses on CloudHub are dynamic until unless a special static addresses are assigned. So it is not possible to setup firewall rules in customer-hosted infrastrcture. More over, even if static IP addresses are assigned, there could be 100s of applications running on cloudhub and setting up rules for all of them would be a hectic task, non-maintainable and definitely got a good practice.

>> Thbeest practice recommended by MulesoftIn( fact any cloud provider), is to have your Anypoint VPCs seperated for Prod and Non-Prod and perform the VPC peering or VPN tunneling for these Anypoint VPCs to respective Prod and Non-Prod customer-hosted environment networks.

#### NEW QUESTION 74

A retail company with thousands of stores has an API to receive data about purchases and insert it into a single database. Each individual store sends a batch of purchase data to the API about every 30 minutes. The API implementation uses a database bulk insert command to submit all the purchase data to a database using a custom JDBC driver provided by a data analytics solution provider. The API implementation is deployed to a single CloudHub worker. The JDBC driver processes the data into a set of several temporary disk files on the CloudHub worker, and then the data is sent to an analytics engine using a proprietary protocol. This process usually takes less than a few minutes. Sometimes a request fails. In this case, the logs show a message from the JDBC driver indicating an out-of-file-space message. When the request is resubmitted, it is successful. What is the best way to try to resolve this throughput issue?

- A. se a CloudHub autoscaling policy to add CloudHub workers
- B. Use a CloudHub autoscaling policy to increase the size of the CloudHub worker
- C. Increase the size of the CloudHub worker(s)
- D. Increase the number of CloudHub workers

**Answer: D**

#### Explanation:

Correct Answer

Increase the size of the CloudHub worker(s)

\*\*\*\*\*

The key details that we can take out from the given scenario are:

>> API implementation uses a database bulk insert command to submit all the purchase data to a database

>> JDBC driver processes the data into a set of several temporary disk files on the CloudHub worker

>> Sometimes a request fails and the logs show a message indicating an out-of-file-space message Based on above details:

>> Both auto-scaling options does NOT help because we cannot set auto-scaling rules based on error messages. Auto-scaling rules are kicked-off based on CPU/Memory usages and not due to some given error or disk space issues.

>> Increasing the number of CloudHub workers also does NOT help here because the reason for the failure is not due to performance aspects w.r.t CPU or Memory. It is due to disk-space.

>> Moreover, the API is doing bulk insert to submit the received batch data. Which means, all data is handled by ONE worker only at a time. So, the disk space issue should be tackled on "per worker" basis. Having multiple workers does not help as the batch may still fail on any worker when disk is out of space on that particular worker.

Therefore, the right way to deal this issue and resolve this is to increase the vCore size of the worker so that a new worker with more disk space will be provisioned.

#### NEW QUESTION 79

What is a typical result of using a fine-grained rather than a coarse-grained API deployment model to implement a given business process?

- A. A decrease in the number of connections within the application network supporting the business process
- B. A higher number of discoverable API-related assets in the application network
- C. A better response time for the end user as a result of the APIs being smaller in scope and complexity
- D. An overall tower usage of resources because each fine-grained API consumes less resources

**Answer: B**

#### Explanation:

Correct Answer

A higher number of discoverable API-related assets in the application network.

\*\*\*\*\*

>> We do NOT get faster response times in fine-grained approach when compared to coarse-grained approach.

>> In fact, we get faster response times from a network having coarse-grained APIs compared to a network having fine-grained APIs model. The reasons are below.

Fine-grained approach:

- \* 1. will have more APIs compared to coarse-grained
- \* 2. So, more orchestration needs to be done to achieve a functionality in business process.
- \* 3. Which means, lots of API calls to be made. So, more connections will needs to be established. So, obviously more hops, more network i/o, more number of integration points compared to coarse-grained approach where fewer APIs with bulk functionality embedded in them.
- \* 4. That is why, because of all these extra hops and added latencies, fine-grained approach will have bit more response times compared to coarse-grained.
- \* 5. Not only added latencies and connections, there will be more resources used up in fine-grained approach due to more number of APIs.

That's why, fine-grained APIs are good in a way to expose more number of resuable assets in your network and make them discoverable. However, needs more maintenance, taking care of integration points, connections, resources with a little compromise w.r.t network hops and response times.

#### NEW QUESTION 80

A system API has a guaranteed SLA of 100 ms per request. The system API is deployed to a primary environment as well as to a disaster recovery (DR) environment, with different DNS names in each environment. An upstream process API invokes the system API and the main goal of this process API is to respond to client requests in the least possible time. In what order should the system APIs be invoked, and what changes should be made in order to speed up the response time for requests from the process API?

- A. In parallel, invoke the system API deployed to the primary environment and the system API deployed to the DR environment, and ONLY use the first response
- B. In parallel, invoke the system API deployed to the primary environment and the system API deployed to the DR environment using a scatter-gather configured with a timeout, and then merge the responses
- C. Invoke the system API deployed to the primary environment, and if it fails, invoke the system API deployed to the DR environment
- D. Invoke ONLY the system API deployed to the primary environment, and add timeout and retry logic to avoid intermittent failures

**Answer: A**

**Explanation:**

Correct Answer

In parallel, invoke the system API deployed to the primary environment and the system API deployed to the DR environment, and ONLY use the first response.

\*\*\*\*\*

>> The API requirement in the given scenario is to respond in least possible time.

>> The option that is suggesting to first try the API in primary environment and then fallback to API in DR environment would result in successful response but NOT in least possible time. So, this is NOT a right choice of implementation for given requirement.

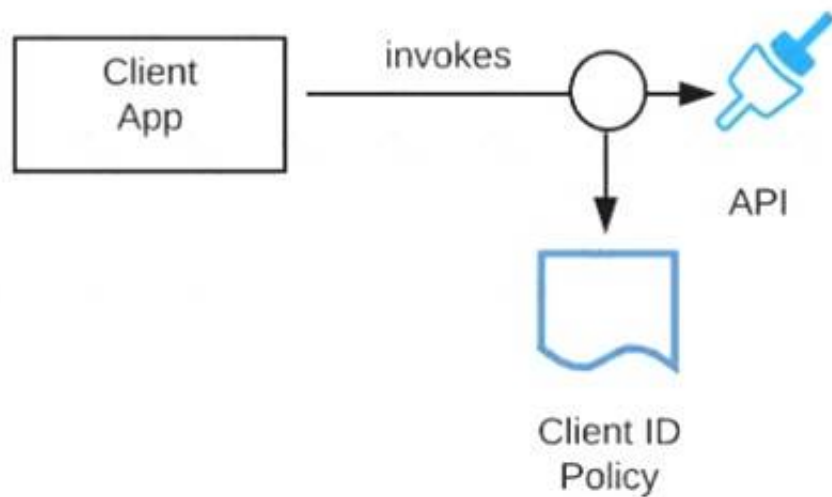
>> Another option that is suggesting to ONLY invoke API in primary environment and to add timeout and retries may also result in successful response upon retries but NOT in least possible time. So, this is also NOT a right choice of implementation for given requirement.

>> One more option that is suggesting to invoke API in primary environment and API in DR environment in parallel using Scatter-Gather would result in wrong API response as it would return merged results and moreover, Scatter-Gather does things in parallel which is true but still completes its scope only on finishing all routes inside it. So again, NOT a right choice of implementation for given requirement

The Correct choice is to invoke the API in primary environment and the API in DR environment parallelly, and using ONLY the first response received from one of them.

**NEW QUESTION 85**

Refer to the exhibit.



A developer is building a client application to invoke an API deployed to the STAGING environment that is governed by a client ID enforcement policy. What is required to successfully invoke the API?

- A. The client ID and secret for the Anypoint Platform account owning the API in the STAGING environment
- B. The client ID and secret for the Anypoint Platform account's STAGING environment
- C. The client ID and secret obtained from Anypoint Exchange for the API instance in the STAGING environment
- D. A valid OAuth token obtained from Anypoint Platform and its associated client ID and secret

**Answer: C**

**Explanation:**

Correct Answer

The client ID and secret obtained from Anypoint Exchange for the API instance in the STAGING environment

\*\*\*\*\*

>> We CANNOT use the client ID and secret of Anypoint Platform account or any individual environments for accessing the APIs

>> As the type of policy that is enforced on the API in question is "Client ID Enforcement Policy", OAuth token based access won't work.

Right way to access the API is to use the client ID and secret obtained from Anypoint Exchange for the API instance in a particular environment we want to work on.

References:

Managing API instance Contracts on API Manager <https://docs.mulesoft.com/api-manager/1.x/request-access-to-api-task> <https://docs.mulesoft.com/exchange/to-request-access> <https://docs.mulesoft.com/api-manager/2.x/policy-mule3-client-id-based-policies>

**NEW QUESTION 90**

A system API is deployed to a primary environment as well as to a disaster recovery (DR) environment, with different DNS names in each environment. A process API is a client to the system API and is being rate limited by the system API, with different limits in each of the environments. The system API's DR environment provides only 20% of the rate limiting offered by the primary environment. What is the best API fault-tolerant invocation strategy to reduce overall errors in the process API, given these conditions and constraints?

- A. Invoke the system API deployed to the primary environment; add timeout and retry logic to the process API to avoid intermittent failures; if it still fails, invoke the system API deployed to the DR environment
- B. Invoke the system API deployed to the primary environment; add retry logic to the process API to handle intermittent failures by invoking the system API deployed to the DR environment
- C. In parallel, invoke the system API deployed to the primary environment and the system API deployed to the DR environment; add timeout and retry logic to the process API to avoid intermittent failures; add logic to the process API to combine the results
- D. Invoke the system API deployed to the primary environment; add timeout and retry logic to the process API to avoid intermittent failures; if it still fails, invoke a copy of the process API deployed to the DR environment

**Answer: A**

**Explanation:**

**Correct Answer**

Invoke the system API deployed to the primary environment; add timeout and retry logic to the process API to avoid intermittent failures; if it still fails, invoke the system API deployed to the DR environment

\*\*\*\*\*

There is one important consideration to be noted in the question which is - System API in DR environment provides only 20% of the rate limiting offered by the primary environment. So, comparatively, very less calls will be allowed into the DR environment API opposed to its primary environment. With this in mind, let's analyse what is the right and best fault-tolerant invocation strategy.

\* 1. Invoking both the system APIs in parallel is definitely NOT a feasible approach because of the 20% limitation we have on DR environment. Calling in parallel every time would easily and quickly exhaust the rate limits on DR environment and may not give chance to genuine intermittent error scenarios to let in during the time of need.

\* 2. Another option given is suggesting to add timeout and retry logic to process API while invoking primary environment's system API. This is good so far. However, when all retries failed, the option is suggesting to invoke the copy of process API on DR environment which is not right or recommended. Only system API is the one to be considered for fallback and not the whole process API. Process APIs usually have lot of heavy orchestration calling many other APIs which we do not want to repeat again by calling DR's process API. So this option is NOT right.

\* 3. One more option given is suggesting to add the retry (no timeout) logic to process API to directly retry on DR environment's system API instead of retrying the primary environment system API first. This is not at all a proper fallback. A proper fallback should occur only after all retries are performed and exhausted on Primary environment first. But here, the option is suggesting to directly retry fallback API on first failure itself without trying main API. So, this option is NOT right too.

This leaves us one option which is right and best fit.

- Invoke the system API deployed to the primary environment
- Add Timeout and Retry logic on it in process API
- If it fails even after all retries, then invoke the system API deployed to the DR environment.

**NEW QUESTION 92**

An organization has created an API-led architecture that uses various API layers to integrate mobile clients with a backend system. The backend system consists of a number of specialized components and can be accessed via a REST API. The process and experience APIs share the same bounded-context model that is different from the backend data model. What additional canonical models, bounded-context models, or anti-corruption layers are best added to this architecture to help process data consumed from the backend system?

- A. Create a bounded-context model for every layer and overlap them when the boundary contexts overlap, letting API developers know about the differences between upstream and downstream data models
- B. Create a canonical model that combines the backend and API-led models to simplify and unify data models, and minimize data transformations.
- C. Create a bounded-context model for the system layer to closely match the backend data model, and add an anti-corruption layer to let the different bounded contexts cooperate across the system and process layers
- D. Create an anti-corruption layer for every API to perform transformation for every data model to match each other, and let data simply travel between APIs to avoid the complexity and overhead of building canonical models

**Answer: C**

**Explanation:**

Correct Answer

Create a bounded-context model for the system layer to closely match the backend data model, and add an anti-corruption layer to let the different bounded contexts cooperate across the system and process layers

\*\*\*\*\*

>> Canonical models are not an option here as the organization has already put in efforts and created bounded-context models for Experience and Process APIs. >> Anti-corruption layers for ALL APIs is unnecessary and invalid because it is mentioned that experience and process APIs share same bounded-context model. It is just the System layer APIs that need to choose their approach now.

>> So, having an anti-corruption layer just between the process and system layers will work well. Also to speed up the approach, system APIs can mimic the backend system data model.

**NEW QUESTION 95**

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