APPLICATION NOTE

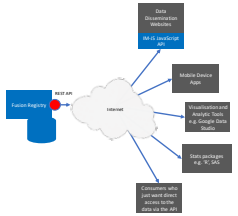
Implementing a Public SDMX REST API using Fusion Registry® 9

SDMX and time-series database solutions for official statistics and business

Implementing a Public SDMX REST API using Fusion Registry® 9

This application note sets out four alternative options for implementing a public SDMX REST API service using Metadata Technology's Fusion Registry 9 Enterprise Edition SDMX data and metadata management system.

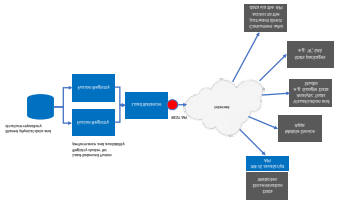
Option 1



Stand-alone Fusion Registry

Simple implementation with a single Fusion Registry 9 instance.
External REST requests are serviced directly by the single Fusion Registry instance's REST interface.

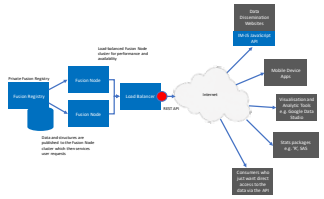
Option 2



Resilient Load-Balanced Fusion Registry Cluster

As Option 1, but using a load-balanced cluster of two or more Fusion Registry instances for improved resilience and capacity.

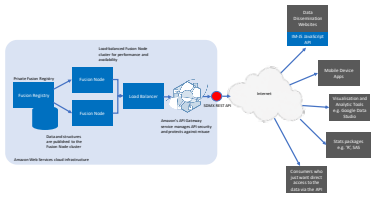
Option 3



Resilient Load-Balanced Fusion Node Cluster

Fusion Node is a light-weight edge server that can be used to service external user REST requests relieving Fusion Registry of the task. The system is controlled by a master Fusion Registry data and metadata repository than can be kept private.

Option 4

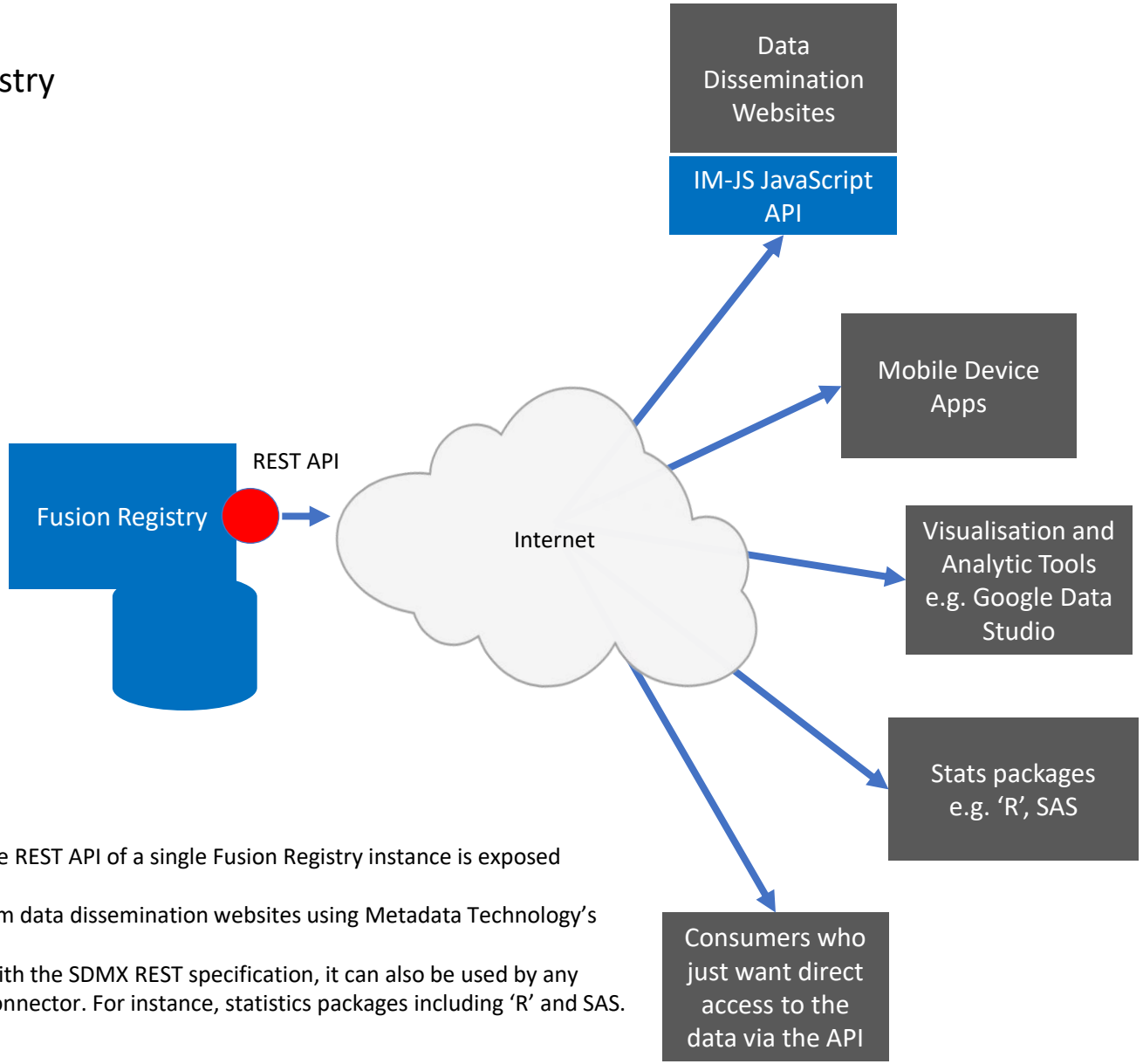


Resilient Fusion Node Cluster with Amazon API Gateway Management

The load-balanced Fusion Node cluster from Option 3, but using Amazon's API Gateway service to manage user access, control demand and protect against API misuse.

Option 1

Stand-alone Fusion Registry



Notes

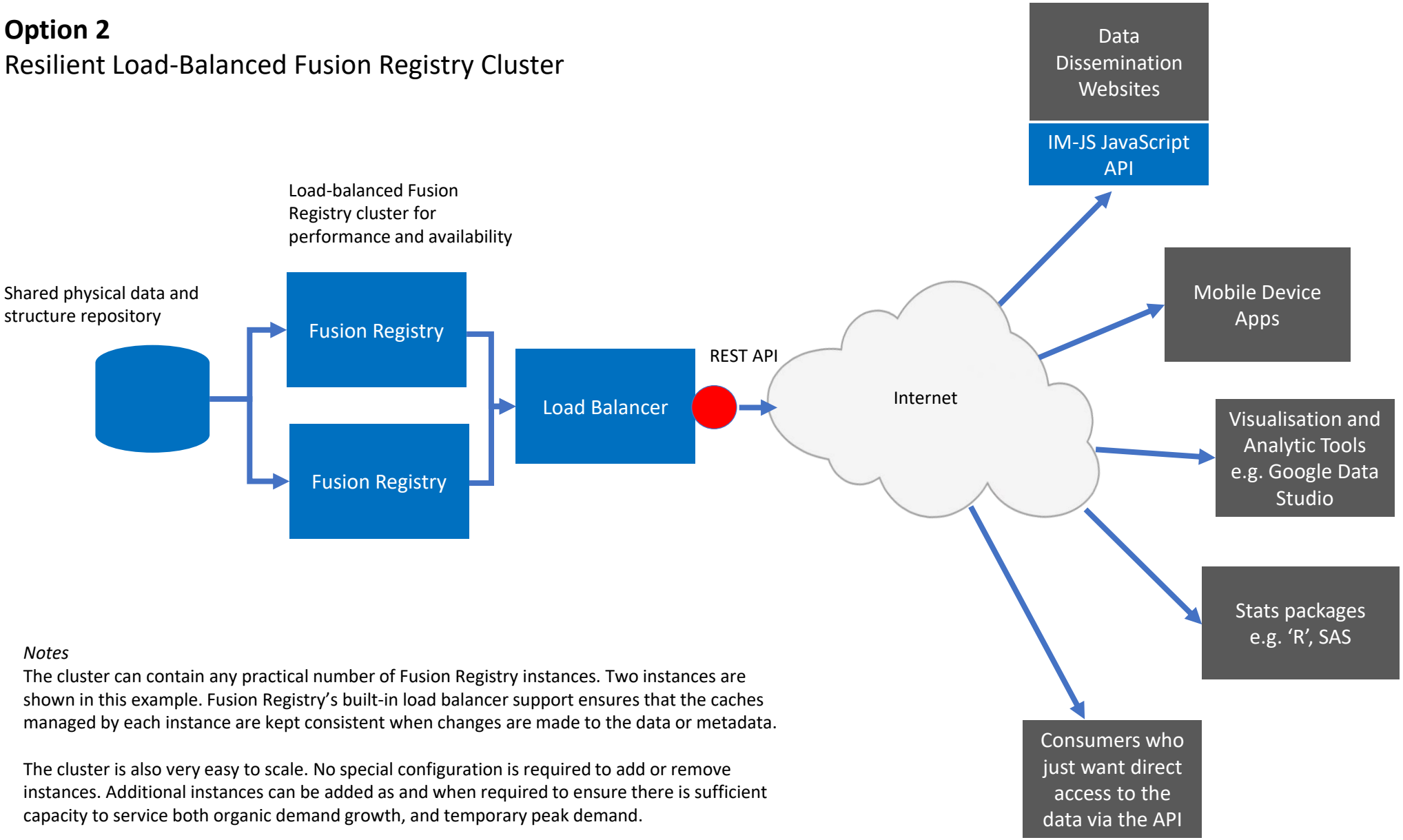
A simple configuration whereby the REST API of a single Fusion Registry instance is exposed publicly.

The API can be used to drive custom data dissemination websites using Metadata Technology's IM-JS client-side JavaScript library.

And, because it's fully compliant with the SDMX REST specification, it can also be used by any other application with a suitable connector. For instance, statistics packages including 'R' and SAS.

Option 2

Resilient Load-Balanced Fusion Registry Cluster



Notes

The cluster can contain any practical number of Fusion Registry instances. Two instances are shown in this example. Fusion Registry's built-in load balancer support ensures that the caches managed by each instance are kept consistent when changes are made to the data or metadata.

The cluster is also very easy to scale. No special configuration is required to add or remove instances. Additional instances can be added as and when required to ensure there is sufficient capacity to service both organic demand growth, and temporary peak demand.

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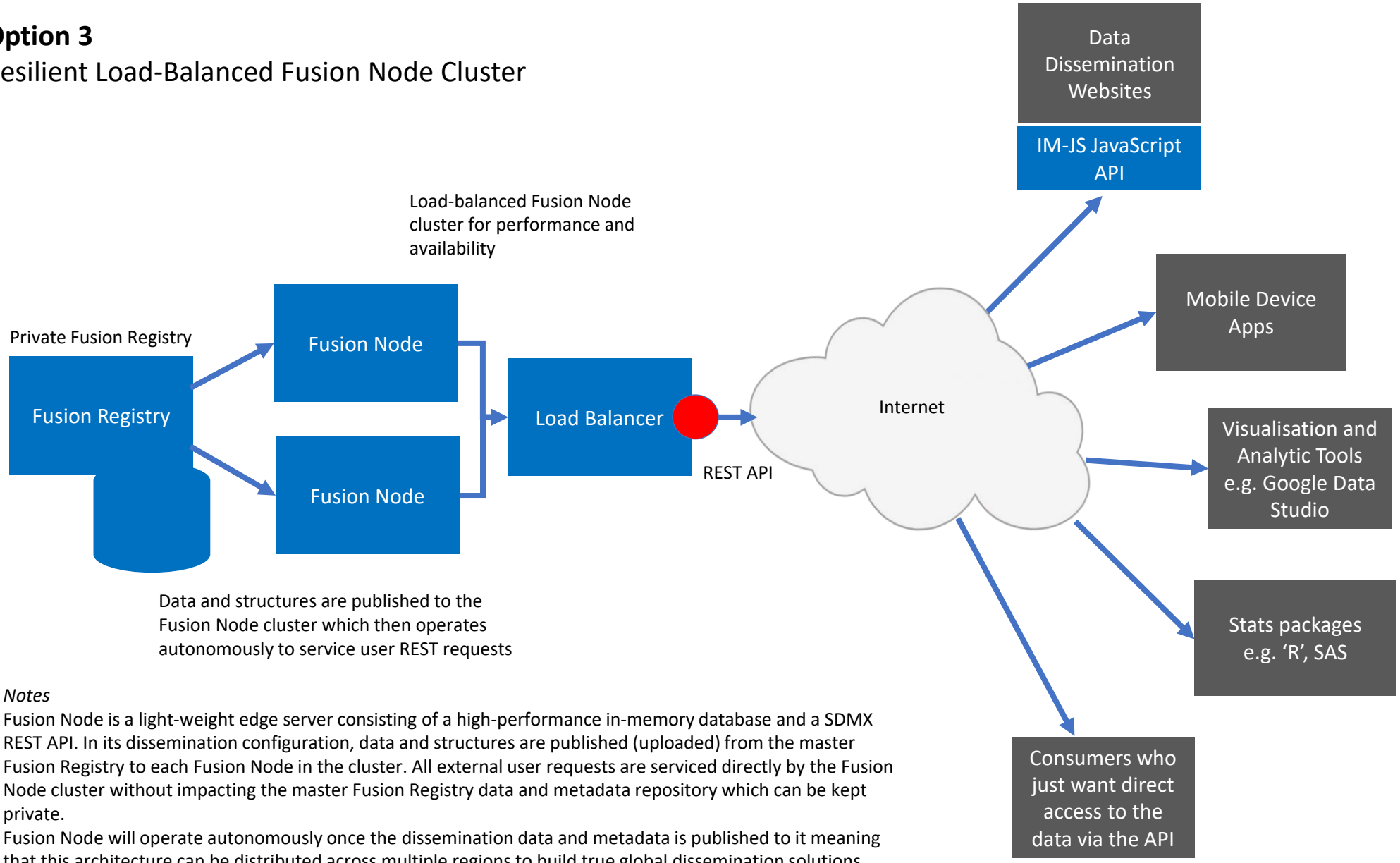
Option 3

Resilient Load-Balanced Fusion Node Cluster



Notes

Fusion Node is a light-weight edge server consisting of a high-performance in-memory database and a SDMX REST API. In its dissemination configuration, data and structures are published (uploaded) from the master Fusion Registry to each Fusion Node in the cluster. All external user requests are serviced directly by the Fusion Node cluster without impacting the master Fusion Registry data and metadata repository which can be kept private.

Fusion Node will operate autonomously once the dissemination data and metadata is published to it meaning that this architecture can be distributed across multiple regions to build true global dissemination solutions.

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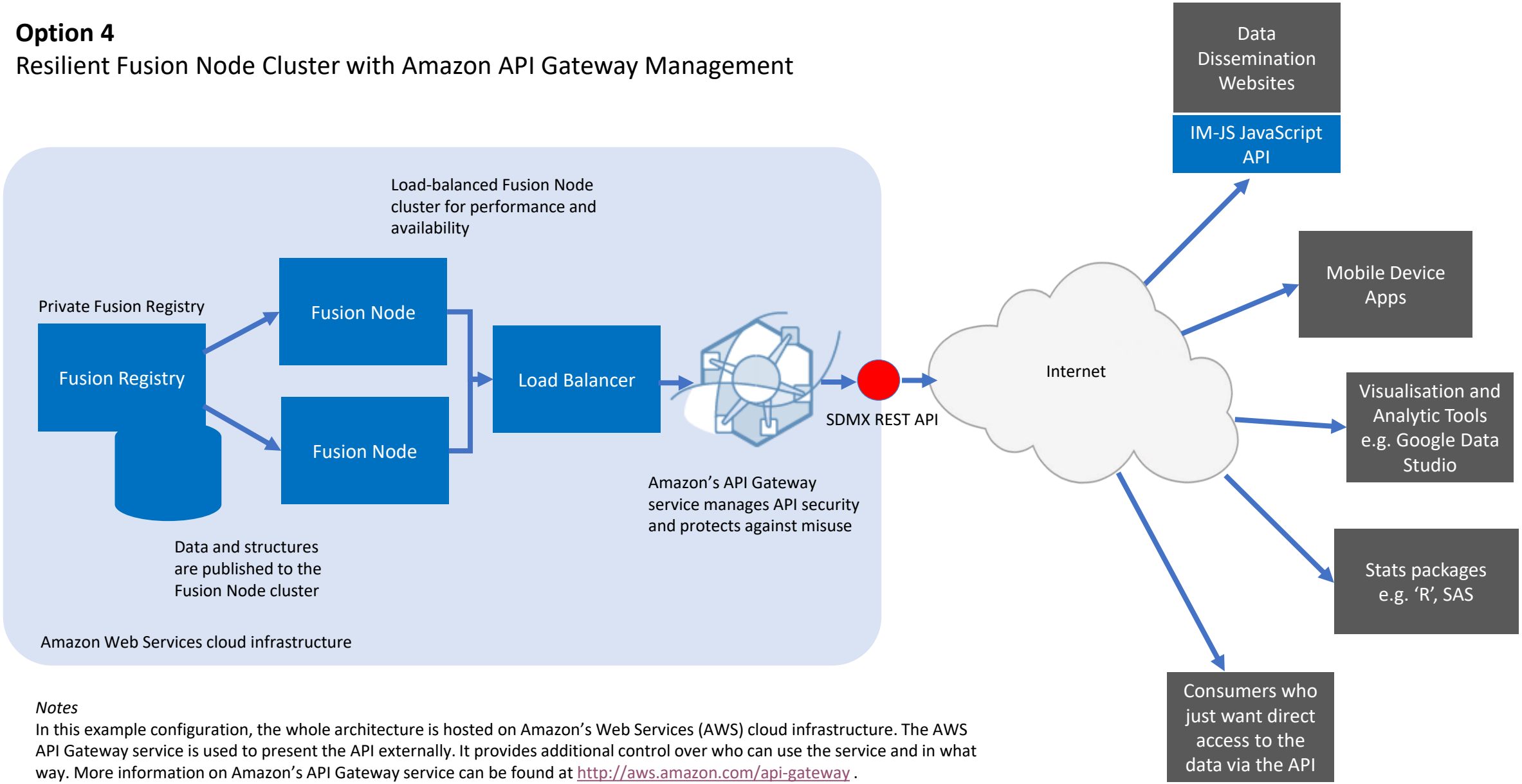
Option 4

Resilient Fusion Node Cluster with Amazon API Gateway Management



Notes

In this example configuration, the whole architecture is hosted on Amazon's Web Services (AWS) cloud infrastructure. The AWS API Gateway service is used to present the API externally. It provides additional control over who can use the service and in what way. More information on Amazon's API Gateway service can be found at http://aws.amazon.com/api-gateway .

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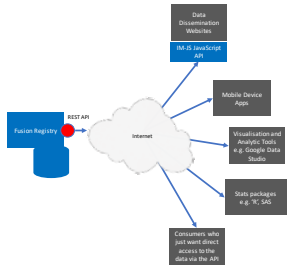
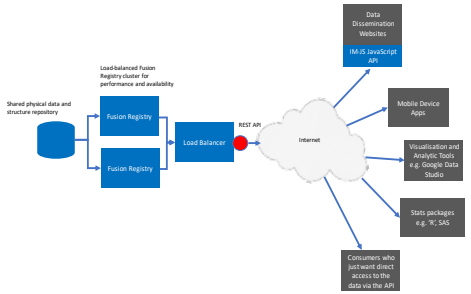
Option Comparison

Option 1
Stand-alone Fusion Registry



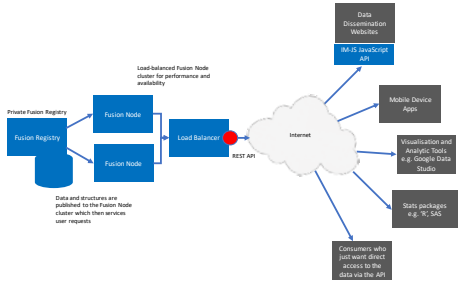
- Simple to deploy
- Ideal for non-critical or low volume applications

Option 2
Resilient load-balanced Fusion Registry cluster



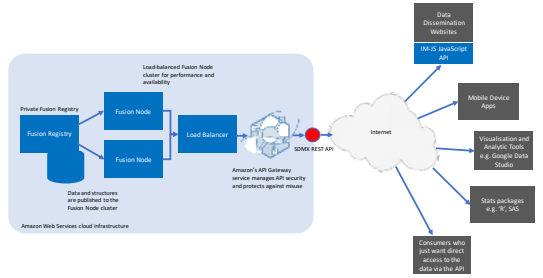
- Resilient
- Scalable
- Ideal for critical and higher volume applications
- Suitable for applications where external users may also need access to the Fusion Registry GUI, e.g. for data reporting purposes

Option 3
Resilient load-balanced Fusion Node cluster



- Resilient
- Scalable
- Can be distributed across multiple regions
- Ideal for critical and higher volume applications
- Keeps the Fusion Registry master repository private
- Suitable for applications where only the REST API needs to be made publicly accessible

Option 4
Resilient Fusion Node Cluster with Amazon API Gateway Management



- Resilient
- Scalable
- Can be distributed across multiple regions
- Ideal for critical and higher volume applications
- Keeps the Fusion Registry master repository private
- Provides detailed control over user access to the API and robust protection against misuse

Conclusion

Fusion Registry 9 provides a range of flexible, scalable and secure options for organisations who need to provide a publicly accessible SDMX REST API for dissemination of official statistics.

For non-critical and lower volume applications, Fusion Registry 9 can be deployed as a single instance, or in a load-balanced cluster for more resilience.

Where external access is not required to the Fusion Registry GUI, high demand is anticipated or multi-region scalability is required, deploying Fusion Node edge servers to service public REST requests is recommended.

For ultimate control, consider using Amazon's API Gateway to control access to the service and prevent misuse.

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