ForkMe!

User Manual

3. Report utilization

Version 1

INDEX

3-1. Get an overview of the design

The Summary tab of the report is organized to provide a quick overview of design features.

Point 1) Check the complexity of the design

ForkMe! organizes cloud usage requirements in terms of who (actors), what (resources), and how they are used (context). Therefore, the complexity of the system can be generally confirmed by looking at the number of these factors.

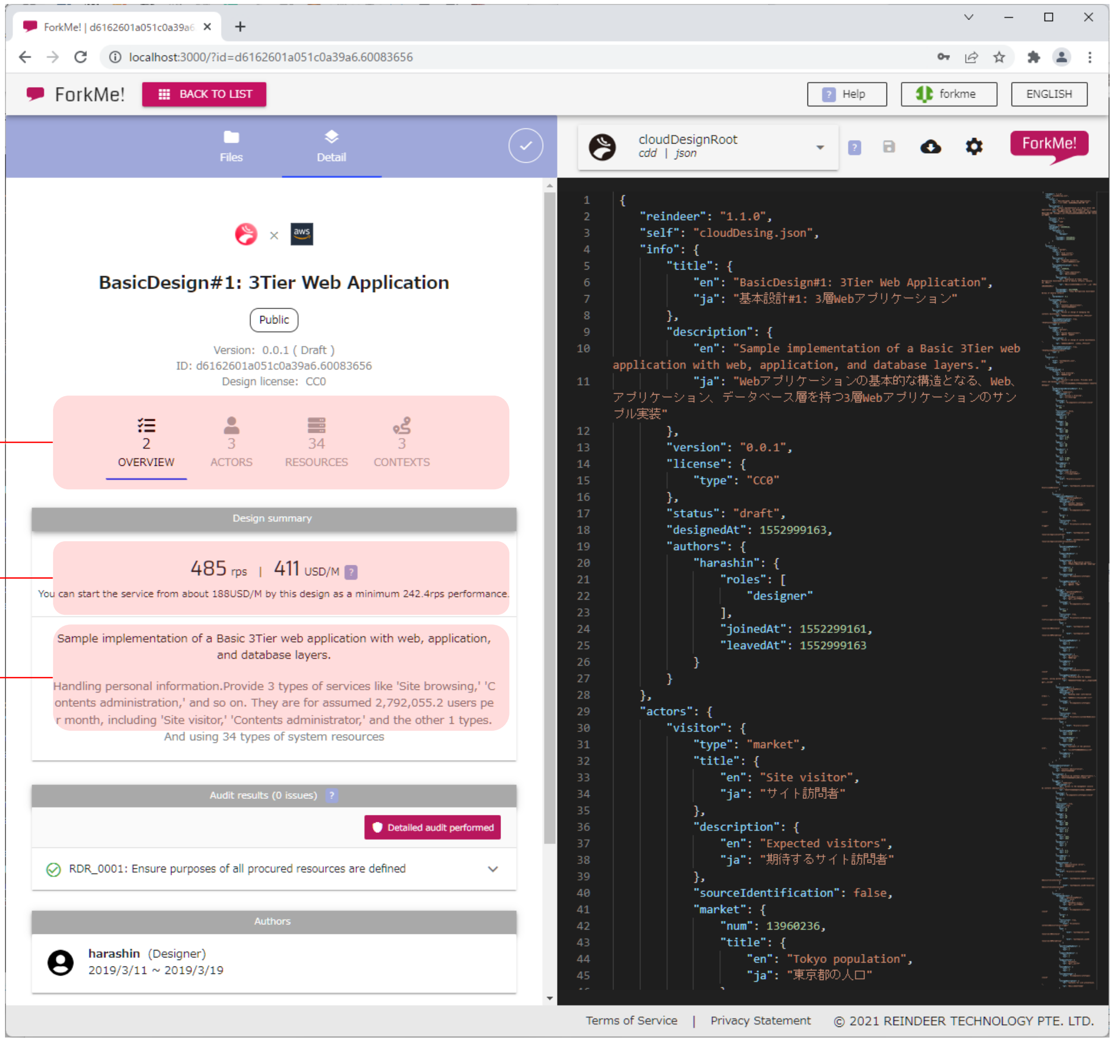
- Many actors: Systems that provide functions to a wide variety of users.
- Many resources: Systems that use a variety of cloud resources.
- Many contexts: Systems that provide a variety of functions.

Point 2) Checking expected performance and cost

ForkMe! automatically calculates expected performance (rps: requests per second) and required cost (monthly cloud usage fee). Please note that these values may differ from actual values, although this system is gradually expanding the supported resources.
Therefore, please use these values as a relative indicator when comparing past designs/designs of others.

Point 3) Check the functional overview.

ForkMe! will summarize key points of the requirements, such as whether the environment is intended to handle personal information and how many users are expected. The summary will include keywords to quickly identify design features.



BasicDesign#1: 3Tier Web Application

Public

Version: 0.0.1 (Draft)
ID: d6162601a051c0a39a6.60083656
Design license: CC0

2	3	34	3
OVERVIEW	ACTORS	RESOURCES	CONTEXTS

Design summary

485 rps | 411 USD/M

You can start the service from about 188USD/M by this design as a minimum 242.4rps performance.

Sample implementation of a Basic 3Tier web application with web, application, and database layers.

Handling personal information.Provide 3 types of services like 'Site browsing,' 'Contents administration,' and so on. They are for assumed 2,792,055.2 users per month, including 'Site visitor,' 'Contents administrator,' and the other 1 types. And using 34 types of system resources

Audit results (0 issues)

Detailed audit performed

RDR_0001: Ensure purposes of all procured resources are defined

Authors

harashin (Designer)
2019/3/11 ~ 2019/3/19

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            "ja": "Webアプリケーションの基本的な構造となる、Web、アプリケーション、データベース層を持つ3層Webアプリケーションのサンプル実装"
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                    "ja": "東京都の人口"
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3-2. Security audit

ForkMe! is a one-stop shop for requirements and design data, improving the quality and speed of security self-checks by designers and audits by the information systems department.

Point: Triage and confirmation of deviation from the default safe

Triage (sorting), like in the medical field, is an effective way to reduce the business risk of a lack of audits while keeping the workload at a sustainable level. First, quickly assess the security risks and determine how much auditing is needed. Next, perform a basic risk check to ensure that default safeguards (keep systems as airtight as possible and do not open unnecessary communication pathways) are followed.

Step 1) Evaluate Security Risks

Review the following information on the Overview tab to assess risk.

1-1) Confirm whether or not personal information is handled and its volume

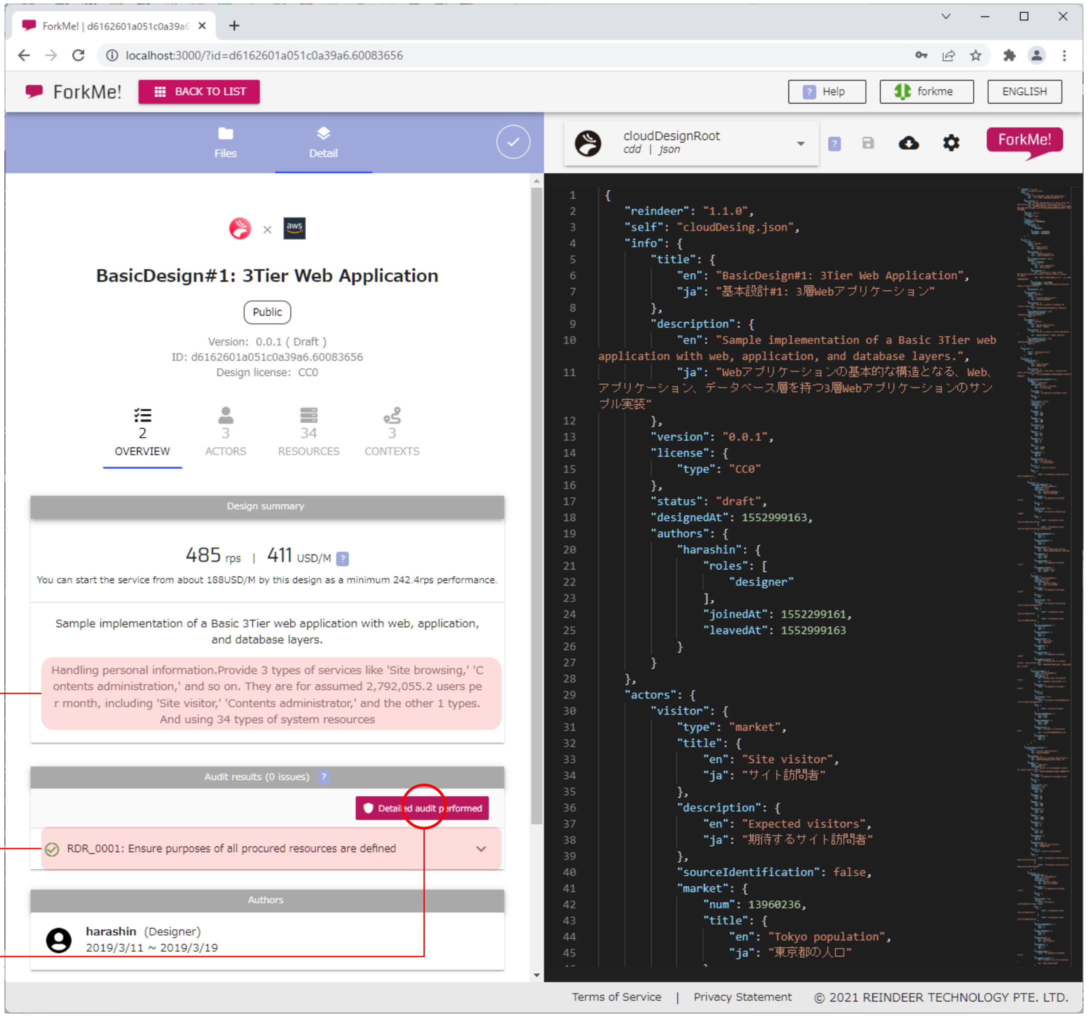
The larger the volume of personal information handled, the greater the impact on the business in the event of a problem. Therefore, first check whether or not personal information is handled in the summary statement and the volume of personal information handled, and if the volume is large, proceed to a detailed audit.

1-2) Check for unused resources.

If "RDR_0001" displayed in the audit results does not have a green check mark, the registered requirement data is incomplete. Please ask the designer to correct the data, as incompleteness prevents correct assessment of security risks.

1-3) Run a static analysis.

Deviations from the generally recommended settings are displayed. If the range of deviation is unacceptable, confirm the reason for the deviation with the designer.



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3-2. Security audit

Step 2) Discover unnecessary communication paths

Check the following information in the context tab to discover unnecessary communication paths.

2-1) Focus on risky communications

Click on "System Overview" to open the drawing and check for red arrows in the diagram. This arrow appears when personal or confidential information is handled in an open communication channel (e.g., providing a login function to an unspecified number of people). If the need is not clear, this path should not be allowed.
In addition, each of the following connections means the following.

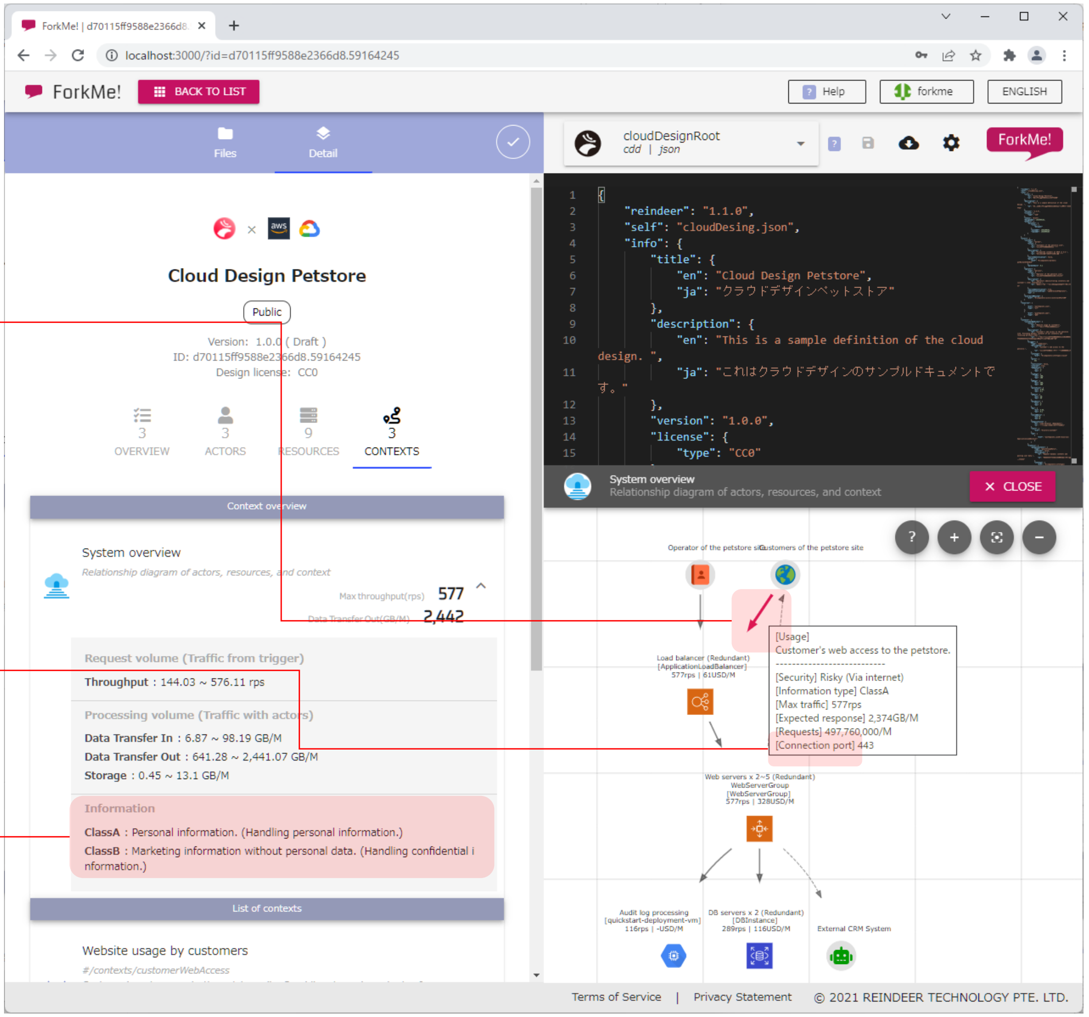
→ Communication with risk (important information is sent and received over an unrestricted route)
→ Non-secure communications (information sent or received that is not required to be public or confidential over an unrestricted channel)
→ Secure communication (information is sent and received over restricted communication paths)
Dashed line is outbound communication from within the system to the actor

2-2) Check the unencrypted ports

Move the cursor over the red arrow and check the ports used. 22, 443, 465, and 995 may indicate that the communication is not encrypted. Ask the designer to encrypt the same route.

2-3) Check the information type to be handled

The information type that the designer has registered as requirement data is displayed. If this classification is different from the information type used by the audit department (e.g., sensitive personal information is class A), the security risk cannot be correctly evaluated, and the designer should be asked to correct the classification.



ForkMe! | d70115ff9588e2366d8.
localhost:3000/?id=d70115ff9588e2366d8.59164245
ForkMe!
BACK TO LIST
Help
forkme
ENGLISH
Files
Detail
cloudDesignRoot
cdd | json
ForkMe!
3 OVERVIEW
3 ACTORS
9 RESOURCES
3 CONTEXTS
Operator of the petstore site
Customers of the petstore site
Load balancer (Redundant) [ApplicationLoadBalancer] 577rps | 61USD/M
Web servers x 2~5 (Redundant) WebServerGroup [WebServerGroup] 577rps | 328USD/M
Audit log processing [quickstart-deployment-vm] 116rps | -USD/M
DB servers x 2 (Redundant) [DBInstance] 289rps | 116USD/M
External CRM System
CLOSE

Cloud Design Petstore

Public

Version: 1.0.0 (Draft)
ID: d70115ff9588e2366d8.59164245
Design license: CC0

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Context overview

System overview
Relationship diagram of actors, resources, and context

Max throughput(rps) 577
Data Transfer Out(GB/M) 2,442

Request volume (Traffic from trigger)
Throughput : 144.03 ~ 576.11 rps

Processing volume (Traffic with actors)
Data Transfer In : 6.87 ~ 98.19 GB/M
Data Transfer Out : 641.28 ~ 2,441.07 GB/M
Storage : 0.45 ~ 13.1 GB/M

Information
ClassA : Personal information. (Handling personal information.)
ClassB : Marketing information without personal data. (Handling confidential information.)

List of contexts

Website usage by customers
#/contexts/customerWebAccess

System overview
Relationship diagram of actors, resources, and context

[Usage]
Customer's web access to the petstore.

[Security] Risky (Via internet)
[Information type] ClassA
[Max traffic] 577rps
[Expected response] 2,374GB/M
[Requests] 497,760,000/M
[Connection port] 443

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3-3. Evaluate cost

ForkMe! is a one-stop shop for requirements and design data, improving the accuracy and speed of cost self-checking by designers and cost evaluation by planners.

Point: Confirmation of cost-effectiveness

The key to cost appropriateness is not simply the price, but whether the cost is commensurate with the importance of the application. Therefore, check to see if relatively large costs are not being incurred for less important applications.

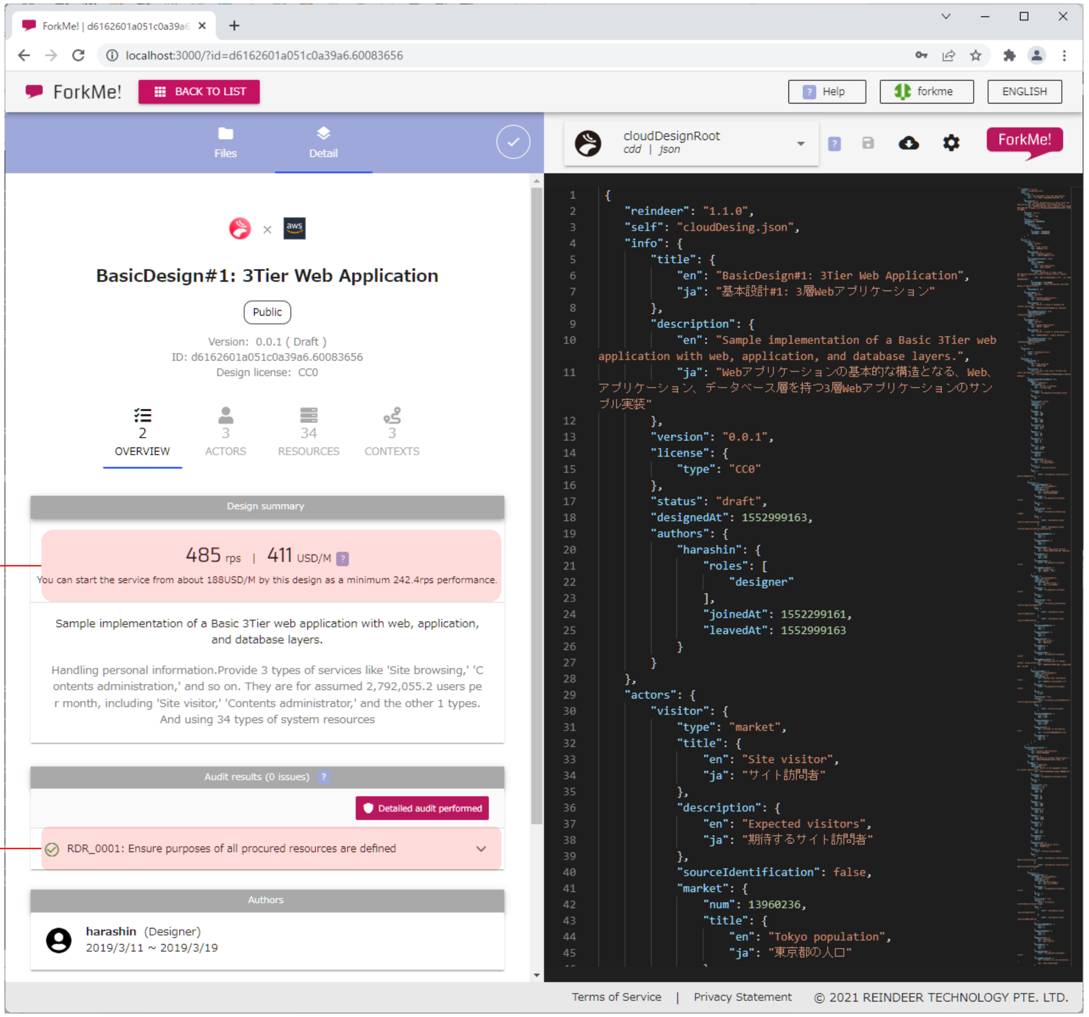
Note: The cost calculation function of this system does not cover all cloud resources at this time. To see the types of resources supported, click on the ? icon to the right of the cost.

Step 1) Confirm basic cost perception

Check the following information on the Overview tab to get a sense of cost.

1-1) Identify the need for a detailed cost evaluation
Check the total estimated cost, including operating and communication costs, on the Summary tab. If this value is considered sufficiently low, there is no need for a detailed evaluation using this system. If not, proceed to the detailed evaluation.

1-2) Check for unused resources.
If there is no green check mark in "RDR_0001" displayed in the audit results, the registered requirement data is incomplete. Please ask the designer to correct the data since costs cannot be properly evaluated if it is incomplete.



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```

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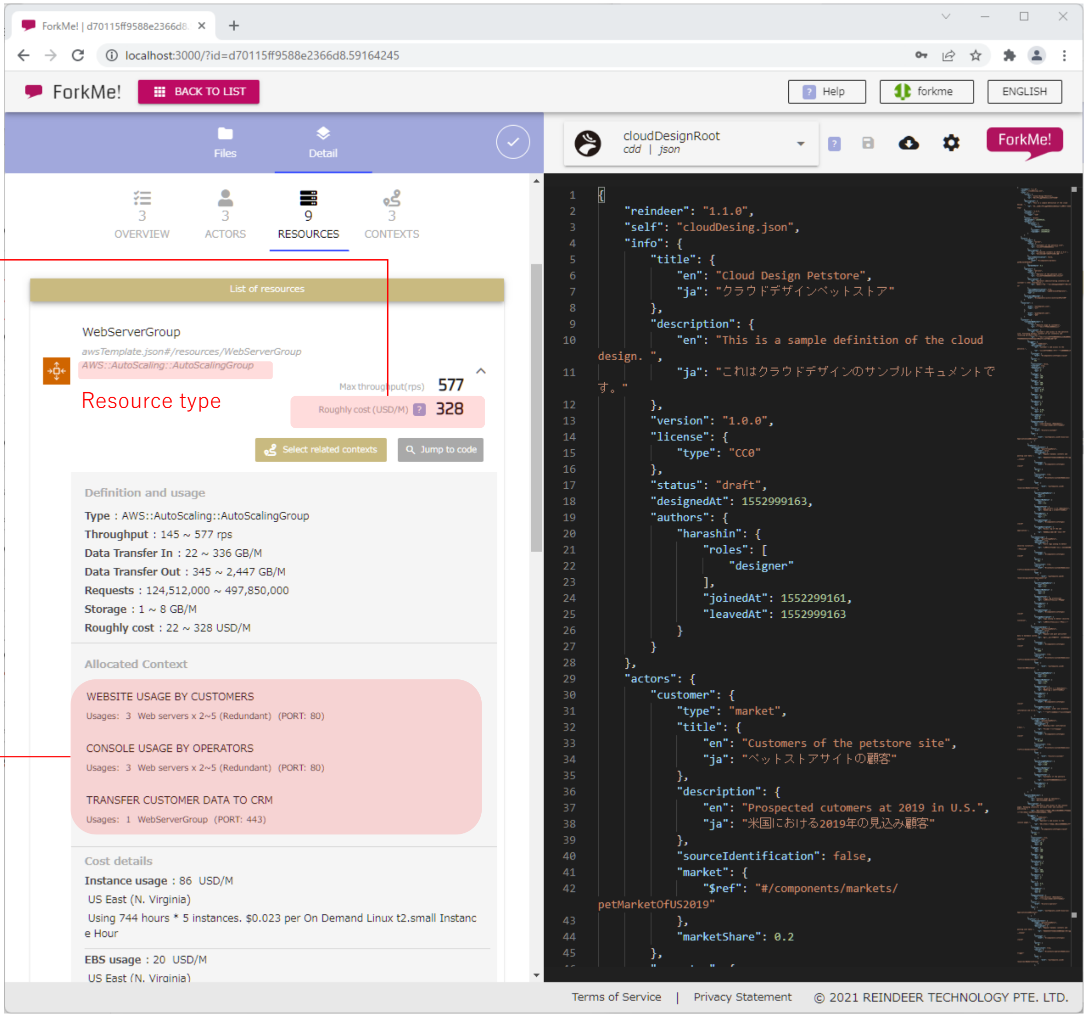
3-3. Evaluate cost

Step 2) Discover wasted occupied resources

Check the following information on the Resources tab to discover wasted occupied resources.

2-1) Check the details of resources starting from the resource with relatively high cost.
Resources are listed in ascending order of cost, so it is efficient to click on a resource from the top to see its details.
However, resources for which the system does not support cost calculation will not have their costs displayed. If you need to check the cost of the resource, please check the official documentation based on the resource type displayed.

2-2) Check the use of the resource.
If only one use (context) for the resource is listed, it means that the resource in question is occupied by a specific use.
If the use is very infrequent (maximum throughput is less than 1) or is intended for a small number of stakeholders, cost justification should be considered.
For example, if a dedicated server is permanently installed for an application that is used only a few times a month, or if a dedicated server is provided for each application even though the function is for non-mission-critical operators, check with the designer for the reason for using occupied resources.
The same cost may be reduced by dual use of resources or by going serverless.



WebServerGroup
awsTemplate.json#/resources/WebServerGroup
AWS::AutoScaling::AutoScalingGroup
Resource type
Max throughput(rps) 577
Roughly cost (USD/M) 328

Definition and usage
Type : AWS::AutoScaling::AutoScalingGroup
Throughput : 145 ~ 577 rps
Data Transfer In : 22 ~ 336 GB/M
Data Transfer Out : 345 ~ 2,447 GB/M
Requests : 124,512,000 ~ 497,850,000
Storage : 1 ~ 8 GB/M
Roughly cost : 22 ~ 328 USD/M

Allocated Context
WEBSITE USAGE BY CUSTOMERS
Usages: 3 Web servers x 2~5 (Redundant) (PORT: 80)
CONSOLE USAGE BY OPERATORS
Usages: 3 Web servers x 2~5 (Redundant) (PORT: 80)
TRANSFER CUSTOMER DATA TO CRM
Usages: 1 WebServerGroup (PORT: 443)

Cost details
Instance usage : 86 USD/M
US East (N. Virginia)
Using 744 hours * 5 instances. $0.023 per On Demand Linux t2.small Instance Hour
EBS usage : 20 USD/M
US East (N. Virginia)

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3-4. Evaluate risk of failure

ForkMe! is a one-stop shop for requirements and design data, improving the accuracy and speed of availability self-checks by designers and failure risk assessments by planners.

Point: Confirmation of Quotas and Single Points of Failure

If each resource or external system is accessed beyond its allowable range (quota or rate limit), or if a resource that cannot be replaced elsewhere (single point of failure) goes down, a part or the entire system will stop. Understand those risks and the scope of their impact in advance, and consider countermeasures as necessary.

Step 1) Apply for resource limit relaxation.

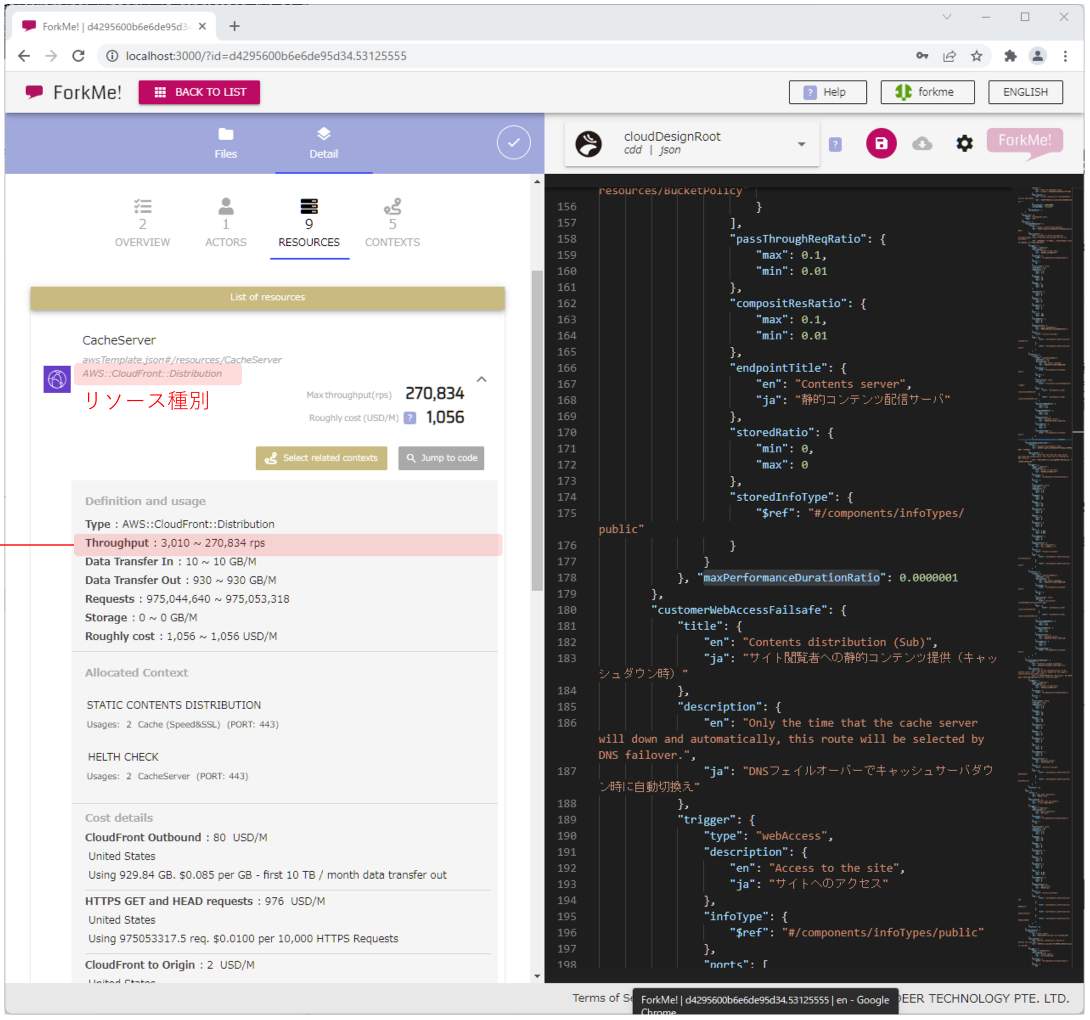
Confirm the following information on the Resource tab and apply for the relaxation of resource limits.

1-1) Check for the need to apply for a ceiling relaxation

Open the details of each resource and check if the usage volume is not expected to exceed the upper limit (quota) specified by the vendor. Refer to the vendor's official documentation for the limits of each resource.
In the example on the right, the estimated throughput of the cache server exceeds the AWS:CloudFront quota of 250,000 rps, so a mitigation request to AWS is required.

1-2) Request for Ceiling Limit Relaxation

Please request the administrator who manages the contract with the Cloud Vendor to apply for the relaxation of the upper limit. Please note that applications are not always approved. If the application is not approved, it is necessary to review the design, such as distributing communications to multiple resources.



CacheServer
awsTemplate.json#/resources/CacheServer
AWS::CloudFront::Distribution
リソース種別
Max throughput(rps) 270,834
Roughly cost (USD/M) 1,056

Definition and usage
Type : AWS::CloudFront::Distribution
Throughput : 3,010 ~ 270,834 rps
Data Transfer In : 10 ~ 10 GB/M
Data Transfer Out : 930 ~ 930 GB/M
Requests : 975,044,640 ~ 975,053,318
Storage : 0 ~ 0 GB/M
Roughly cost : 1,056 ~ 1,056 USD/M

Allocated Context
STATIC CONTENTS DISTRIBUTION
Usages: 2 Cache (Speed&SSL) (PORT: 443)
HELTH CHECK
Usages: 2 CacheServer (PORT: 443)

Cost details
CloudFront Outbound : 80 USD/M
United States
Using 929.84 GB. $0.085 per GB - first 10 TB / month data transfer out
HTTPS GET and HEAD requests : 976 USD/M
United States
Using 975053317.5 req. $0.0100 per 10,000 HTTPS Requests
CloudFront to Origin : 2 USD/M

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3-4. Evaluate risk of failure

Step 2) Apply for the mitigation of the upper limit for external systems (quota measures)

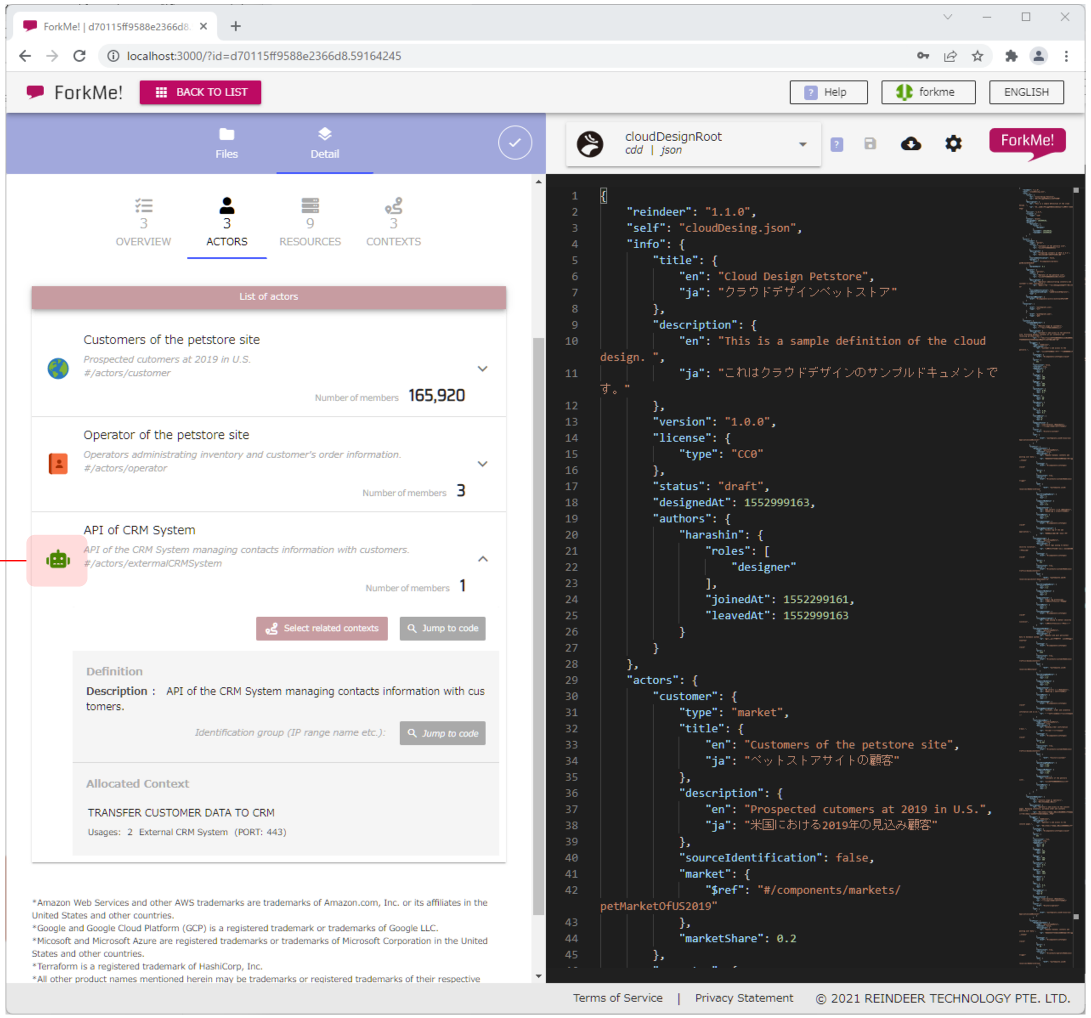
Confirm the following information on the Actor tab, and apply for the upper limit mitigation.

1-1) Check the need for a limit mitigation application.

Relevant external systems, such as APIs and POST request destinations, are indicated by a robot icon. If the assumed throughput of the relevant actor is large, the usage limit set by the external system may be exceeded. In such a case, it may be necessary to apply to the vendor providing the system for relaxation of the upper limit, as some data may be missing or the speed may be reduced.
Please contact each external system for the upper limit of each resource.

1-2) Application for Upper Limit Mitigation

Generally, an application for deregulation should be made by the account administrator who manages the contract with the external system. Note that applications are not always approved.
If the application is not approved, it is necessary to review the design of the system, such as using a cache to reduce the amount of traffic.



Customers of the petstore site
Prospected cutomers at 2019 in U.S.
#/actors/customer
Number of members 165,920

Operator of the petstore site
Operators administrating inventory and customer's order information.
#/actors/operator
Number of members 3

API of CRM System
API of the CRM System managing contacts information with customers.
#/actors/extermalCRMSystem
Number of members 1

Definition
Description : API of the CRM System managing contacts information with customers.
Identification group (IP range name etc.):

Allocated Context
TRANSFER CUSTOMER DATA TO CRM
Usages: 2 External CRM System (PORT: 443)

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*Micosoft and Microsoft Azure are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
*Terraform is a registered trademark of HashiCorp, Inc.
*All other product names mentioned herein may be trademarks or registered trademarks of their respective

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{
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                "ja": "ペットストアサイトの顧客"
            },
            "description": {
                "en": "Prospected cutomers at 2019 in U.S.",
                "ja": "米国における2019年の見込み顧客"
            },
            "sourceIdentification": false,
            "market": {
                "$ref": "#/components/markets/petMarketOfUS2019"
            },
            "marketShare": 0.2
        },
```

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3-4. Evaluate risk of failure

Step 3) Discover high-risk single point of failure

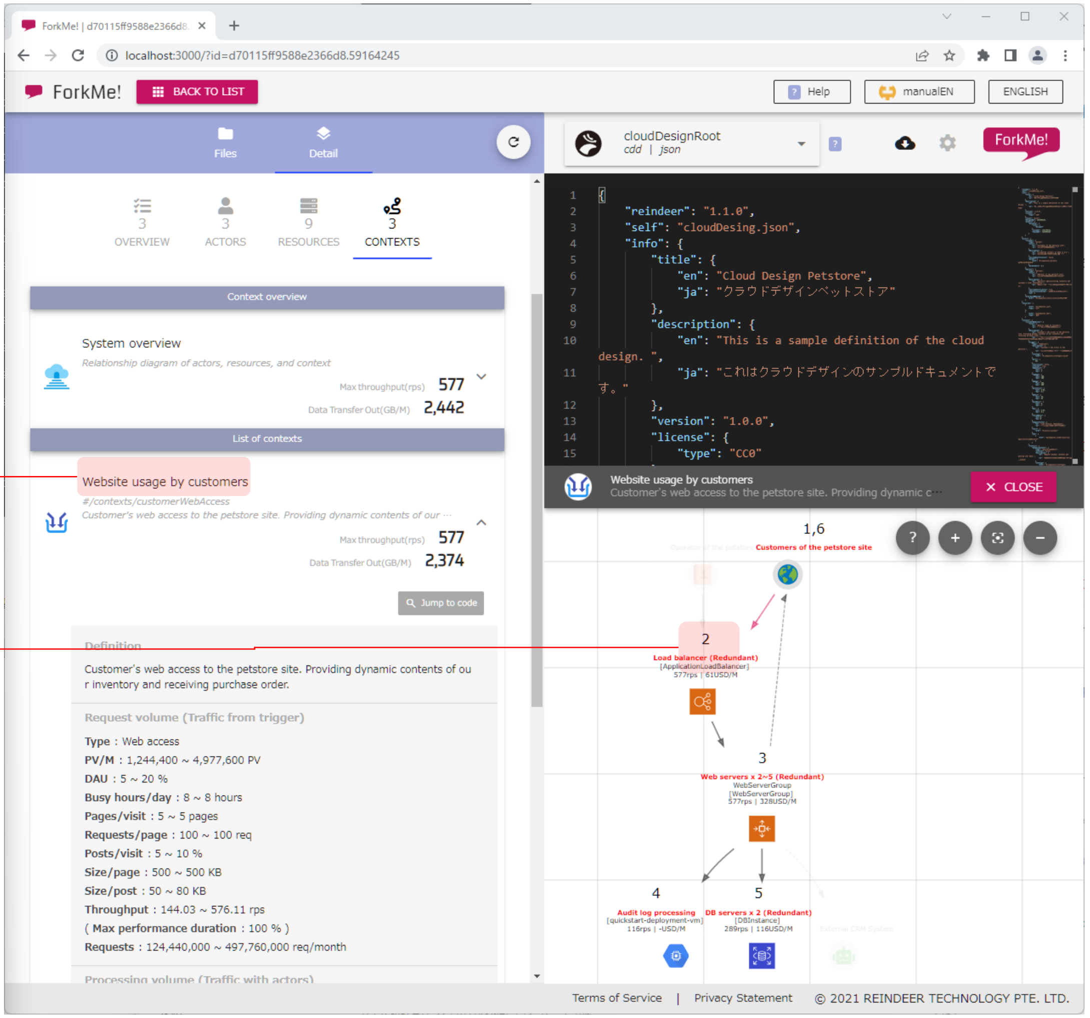
Review the following information in the context tab to discover high-risk single points of failure.

1-1) Find a context where speed of recovery from failure is required.

Using the context name as a hint, find and select the context in which the speed of recovery from failure is required. If it is difficult to judge from the name, select an important actor (e.g., customer or client) from the "Actors" tab of the report. The context selected by pressing the "Select related context" button for the same actor is considered to be the target.

1-2) Finding a resource that is a single point of failure

In the figure on the right of the screen, each actor/resource is assigned a number indicating the order of processing. Let's look at the resources in ascending order of number. If multiple resources of the same type are used with the same number, they are redundant and not a single point of failure. If not, click on each resource to view the resource details and evaluate the risk based on the chart on the next page.



ForkMe! | d70115ff9588e2366d8
localhost:3000/?id=d70115ff9588e2366d8.59164245
ForkMe!
BACK TO LIST
Help
manualEN
ENGLISH
Files
Detail
cloudDesignRoot
cdd | json
ForkMe!
3 OVERVIEW
3 ACTORS
9 RESOURCES
3 CONTEXTS
Context overview
List of contexts
Jump to code
CLOSE
1,6
Customers of the petstore site
2
Load balancer (Redundant)
[ApplicationLoadBalancer]
577rps | 61USD/M
3
Web servers x 2~5 (Redundant)
WebServerGroup
[WebServerGroup]
577rps | 328USD/M
4
Audit log processing
[quickstart-deployment-vm]
116rps | -USD/M
5
DB servers x 2 (Redundant)
[DBInstance]
289rps | 116USD/M
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System overview
Relationship diagram of actors, resources, and context
Max throughput(rps) 577
Data Transfer Out(GB/M) 2,442

Website usage by customers
#/contexts/customerWebAccess
Customer's web access to the petstore site. Providing dynamic contents of our …
Max throughput(rps) 577
Data Transfer Out(GB/M) 2,374

Definition
Customer's web access to the petstore site. Providing dynamic contents of ou
r inventory and receiving purchase order.

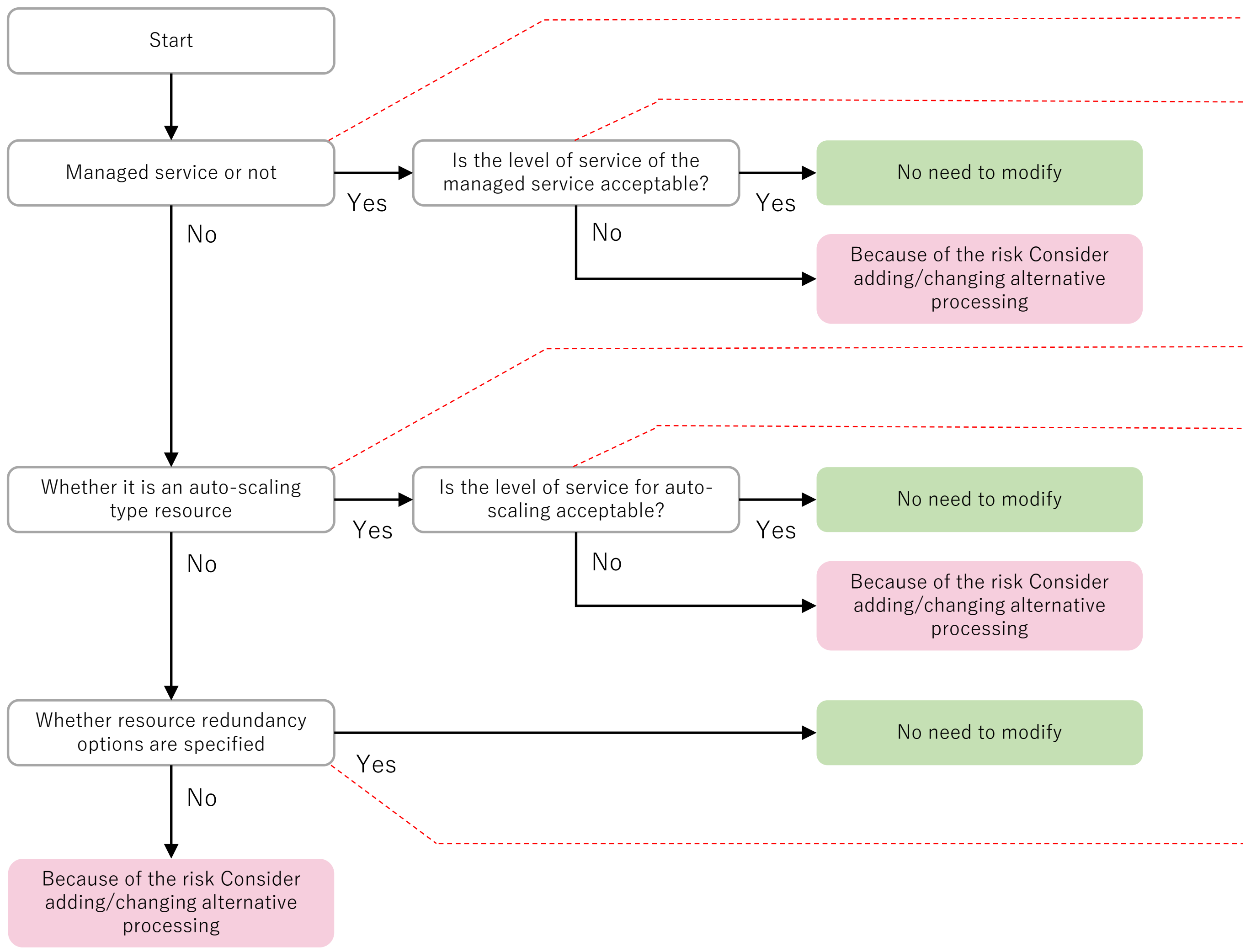
Request volume (Traffic from trigger)
Type : Web access
PV/M : 1,244,400 ~ 4,977,600 PV
DAU : 5 ~ 20 %
Busy hours/day : 8 ~ 8 hours
Pages/visit : 5 ~ 5 pages
Requests/page : 100 ~ 100 req
Posts/visit : 5 ~ 10 %
Size/page : 500 ~ 500 KB
Size/post : 50 ~ 80 KB
Throughput : 144.03 ~ 576.11 rps
(**Max performance duration** : 100 %)
Requests : 124,440,000 ~ 497,760,000 req/month

Processing volume (Traffic with actors)

```
{
    "reindeer": "1.1.0",
    "self": "cloudDesing.json",
    "info": {
        "title": {
            "en": "Cloud Design Petstore",
            "ja": "クラウドデザインペットストア"
        },
        "description": {
            "en": "This is a sample definition of the cloud
design. ",
            "ja": "これはクラウドデザインのサンプルドキュメントで
す。"
        },
        "version": "1.0.0",
        "license": {
            "type": "CC0"
```

Website usage by customers
Customer's web access to the petstore site. Providing dynamic c…

3-4. Evaluate risk of failure


Start
Managed service or not
Yes
Is the level of service of the managed service acceptable?
Yes
No need to modify
No
Because of the risk Consider adding/changing alternative processing
No
Whether it is an auto-scaling type resource
Yes
Is the level of service for auto-scaling acceptable?
Yes
No need to modify
No
Because of the risk Consider adding/changing alternative processing
No
Whether resource redundancy options are specified
Yes
No need to modify
No
Because of the risk Consider adding/changing alternative processing

For example, if the resource type is AWS::ApiGateway::RestApi, it is a managed service type resource that can be maintained and managed by AWS without being aware of the number of servers. In general, resources of the same type are considered to be redundant and not a single point of failure.

Even with managed services, additional risk mitigation measures should be taken if historical trends indicate a risk of failure. (e.g., using API Gateway with DNS failover in the event of CloudFront failure)

For example, if the resource type is AWS::AutoScaling::AutoScalingGroup, it is an auto-scaling type resource that automatically adjusts the number of servers when the risk of failure increases. Since the same type of resource can be adjusted for redundancy, it can generally be determined that it is not a single point of failure.

Even with auto-scaling type resources, additional risk mitigation measures should be taken if the delay time during scaling does not meet the requirements. (e.g., by permanently installing instances instead of relying on AutoScaling)

Some resources may have redundancy in the optional settings (e.g. MultiAZ in RDS). Please check the provisioning code by clicking on "Check Source" or contact the designer to see if the option is enabled.