

# Application Service Mesh

## Getting Started

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# 1 Grayscale Release Practices of Bookinfo

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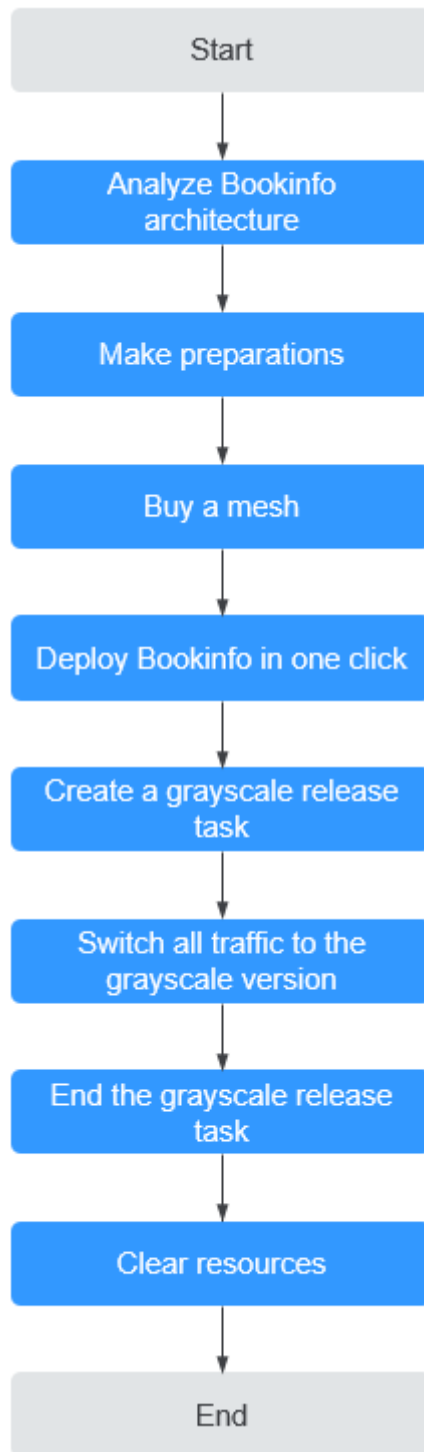
Application Service Mesh (ASM) is a service mesh platform developed based on Istio. It seamlessly interconnects with Cloud Container Engine (CCE), an enterprise-level Kubernetes cluster service. With better usability, reliability, and visualization, ASM provides you with out-of-the-box features and enhanced user experience.

## Introduction

Grayscale release facilitates smooth rollout of iterative software products in production environments. This section takes Bookinfo as an example to illustrate Istio-based service governance using ASM.

The grayscale release process of Bookinfo is as follows.

**Figure 1-1** Grayscale release process of Bookinfo



## Architecture Analysis of Bookinfo

Bookinfo is an application that functions as an online bookstore. It displays a book with its description, details (such as pages), and reviews.

Bookinfo consists of four independent services developed in different languages. These services do not depend on ASM, but demonstrate the features of a typical

service mesh, and the reviews service has multiple versions. The four services are described as follows:

- productpage: calls the details and reviews services to generate a page.
- details: contains book information.
- reviews: contains book reviews and calls the ratings service.
- ratings: contains book rating information based on reviews.

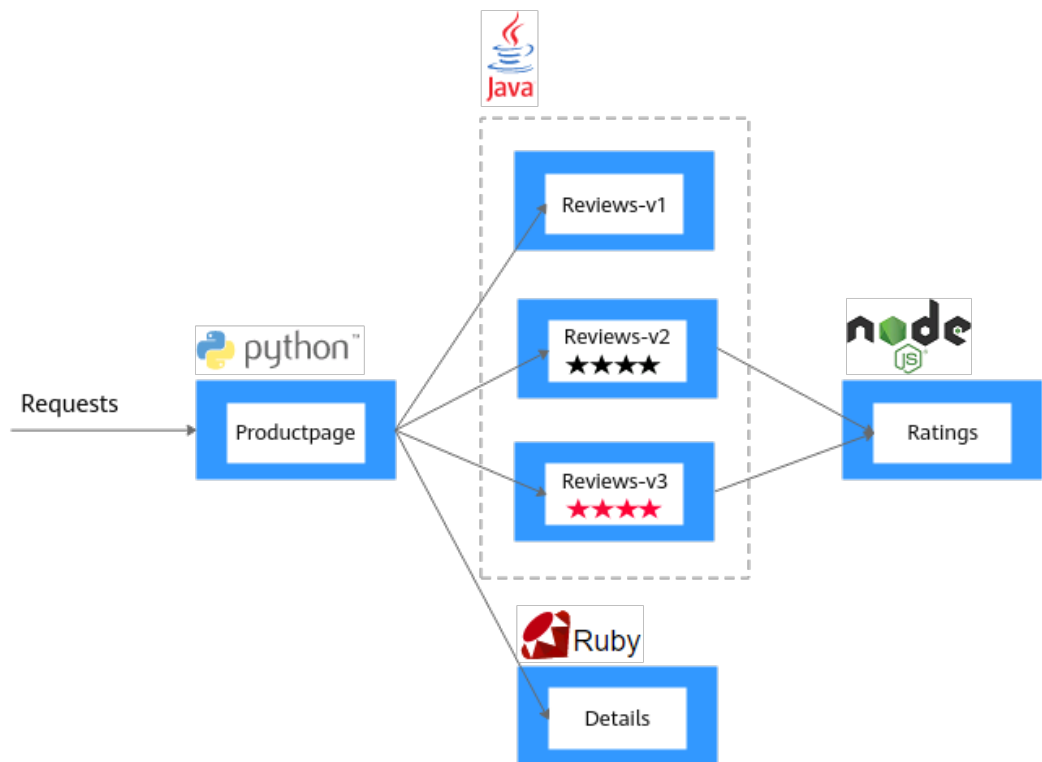
The reviews service has three versions:

- The v1 (1.5.0) version does not call the ratings service.
- The v2 (1.5.1) version calls the ratings service, and uses one to five black stars to show ratings.
- The v3 (1.5.2) version calls the ratings service, and uses one to five red stars to show ratings.

 **NOTE**

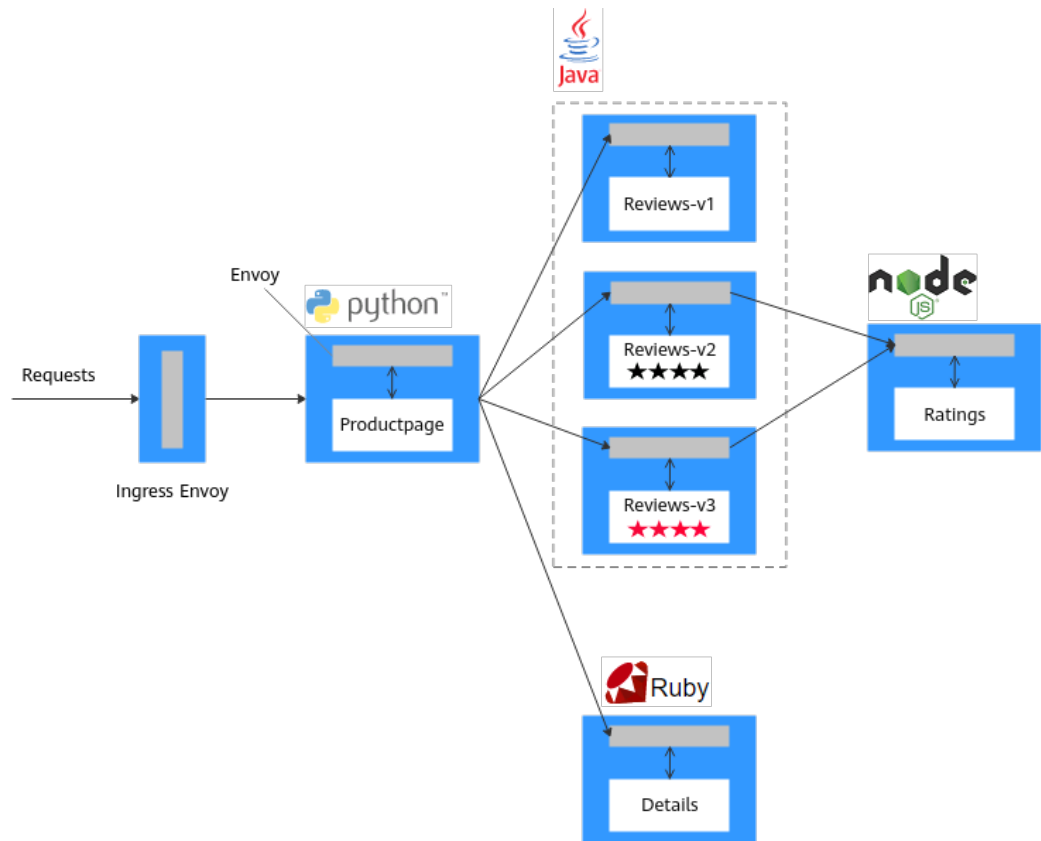
To demonstrate traffic switching between grayscale versions, this section takes v1.5.1 (rating with black stars) and v1.5.2 (rating with red stars) of the reviews service as examples.

**Figure 1-2** End-to-end architecture of Bookinfo



Running Bookinfo with ASM does not require any changes on the application itself. Simply configure and run the services in the ASM environment, that is, inject an Envoy sidecar into each service. [Figure 1-3](#) shows the final deployment.

Figure 1-3 Bookinfo with sidecars injected



All services are integrated with Envoy sidecars. All inbound and outbound traffic of the integrated services is intercepted by sidecars. In this way, ASM can provide service routing, telemetry data collection, and policy implementation for Bookinfo.

## Preparations

Perform the following operations.

### Step 1 Create a VPC and subnet.

Virtual Private Cloud (VPC) provides a logically isolated, configurable, and manageable virtual network environment, improving resource security and simplifying network deployment.

1. Log in to the VPC console.
2. Click **Create VPC** in the upper right corner.
3. Retain default settings for parameters unless otherwise specified. Then, click **Create Now**.

For details, see [Creating a VPC](#).

### Step 2 (Optional) Create a key pair.

To create a cluster node using the key pair login mode, create a key pair in advance.

1. Log in to the Elastic Cloud Server (ECS) console.

2. In the navigation pane, choose **Key Pair**. On the **Key Pair** page, click **Create Key Pair** in the upper right corner.
3. Enter a key pair name and click **OK**.
4. Manually or automatically download the private key file. The file name is the specified key pair name with a suffix of **.pem**. Securely store the private key file. In the dialog box displayed, click **OK**.

 **NOTE**

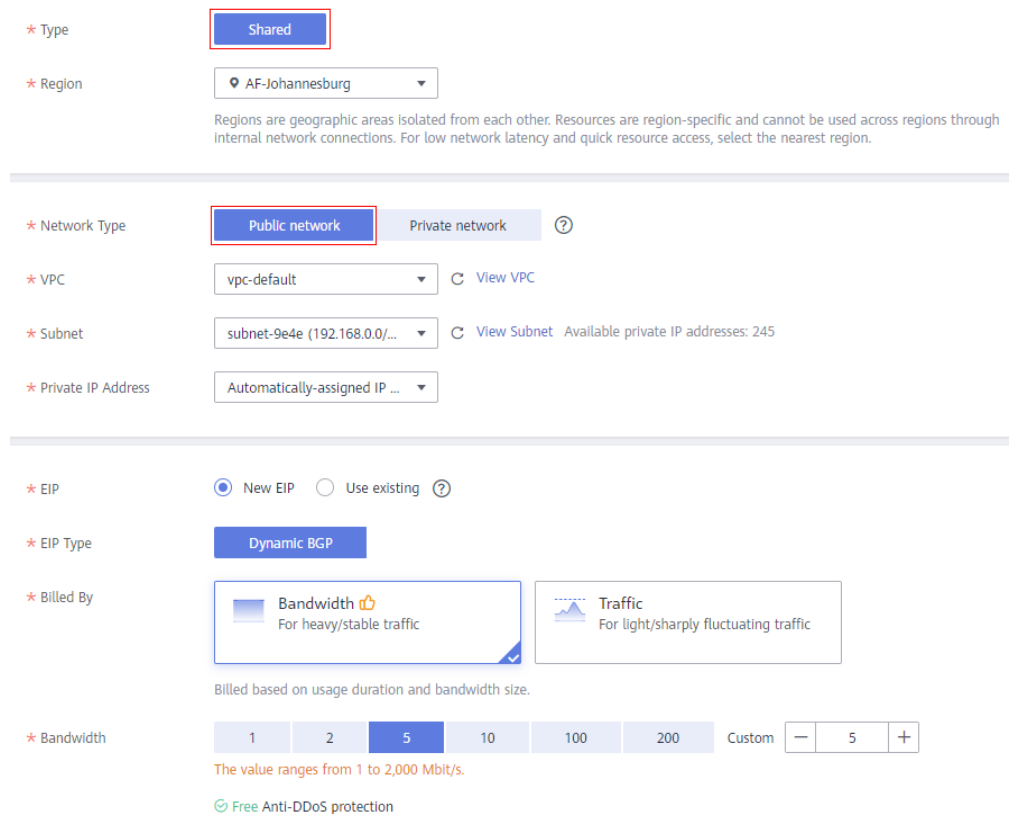
For security purposes, a key pair can be downloaded only once. Keep it secure to ensure successful login.

**Step 3** Create a load balancer.

A load balancer will be used as the external access entry of a service mesh. Traffic managed by a service mesh will be distributed by this load balancer to backend services.

1. Log in to the Elastic Load Balance (ELB) console.
2. Click **Buy Elastic Load Balancer** in the upper right corner.
3. Purchase a dedicated load balancer by referring to [Creating a Dedicated Load Balancer](#).
  - **Network Type:** Select **Public network**.
  - **VPC and Subnet:** Select the VPC and subnet created in [Step 1](#) respectively.

**Figure 1-4** Buying an elastic load balancer



\* Type: Shared

\* Region: AF-Johannesburg

Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.

\* Network Type: Public network | Private network

\* VPC: vpc-default | View VPC

\* Subnet: subnet-9e4e (192.168.0.0/...) | View Subnet | Available private IP addresses: 245

\* Private IP Address: Automatically-assigned IP ...

\* EIP:  New EIP |  Use existing

\* EIP Type: Dynamic BGP

\* Billed By: Bandwidth (For heavy/stable traffic) | Traffic (For light/sharply fluctuating traffic)

Billed based on usage duration and bandwidth size.

\* Bandwidth: 1 | 2 | 5 | 10 | 100 | 200 | Custom | - | 5 | +

The value ranges from 1 to 2,000 Mbit/s.

Free Anti-DDoS protection



**Step 4** Create a cluster.

1. Log in to the Cloud Container Engine (CCE) console.
2. In the navigation pane, choose **Resource Management > Clusters**. On the displayed page, click **Buy** next to **CCE Cluster**.  
For details about how to create a cluster, see [Buying a CCE Cluster](#).
3. On the **Configure** page, set the following parameters and retain the default values for other parameters:
  - **Cluster Name**: Enter a cluster name, for example, **cce-asm**.
  - **VPC and Subnet**: Select the VPC and subnet created in [Step 1](#) respectively.
4. Click **Next: Create Node** and set the parameters as prompted. Set **Specifications** and **Login Mode** as follows, and retain the default settings for the other parameters.
  - **Specifications**: 4 vCPUs and 8 GB memory.

 **NOTE**

This is the minimum specifications for deploying Bookinfo.

- **Login Mode**: Select the key pair created in [Step 2](#) for identity authentication upon remote node login.
5. Click **Next: Install Add-on**, and select the add-ons to be installed in the **Install Add-on** step.  
**System resource add-on** must be installed. **Advanced functional add-on** is optional.
  6. Click **Next: Confirm**. Read the product constraints and select **I am aware of the above limitations**. Review the configured parameters and specifications.
  7. **Submit** the order.  
If the cluster will be billed on a **yearly/monthly** basis, click **Pay Now** and follow on-screen prompts to pay the order.  
It takes about 6 to 10 minutes to create a cluster. You can click **Back to Cluster List** to perform other operations on the cluster or click **Go to Cluster Events** to view the cluster details.

**Step 5** Prepare the images required by Bookinfo (as shown in [Table 1-1](#)), push them to SWR and set their **Type** to **Public**.

 **CAUTION**

The image name and tag of each service must be the same as those in [Table 1-1](#). Otherwise, the experience task may fail.

**Table 1-1** Image list

Service	Image Name	Image Tag
productpage	examples-bookinfo-productpage-v1	1.5.0
details	examples-bookinfo-details-v1	1.5.0

Service	Image Name	Image Tag
ratings	examples-bookinfo-ratings-v1	1.5.0
reviews	examples-bookinfo-reviews-v1	1.5.1
	examples-bookinfo-reviews-v1	1.5.2

The following uses the Bookinfo image as an example:

1. Prepare a computer that can access the Internet and has Docker 1.11.2 or later installed.
2. Run the following commands in sequence to download the images required by Bookinfo:

```
docker pull docker.io/istio/examples-bookinfo-productpage-v1:1.5.0
```

```
docker pull docker.io/istio/examples-bookinfo-details-v1:1.5.0
```

```
docker pull docker.io/istio/examples-bookinfo-ratings-v1:1.5.0
```

```
docker pull docker.io/istio/examples-bookinfo-reviews-v2:1.5.0
```

```
docker pull docker.io/istio/examples-bookinfo-reviews-v3:1.5.0
```

3. Connect to SWR. For details, see [Uploading an Image Through a Container Engine Client](#).
4. Label the image pulled in [Step 5.2](#). Ensure that the image name and tag are the same as those in [Table 1-1](#).

```
docker tag docker.io/istio/examples-bookinfo-productpage-v1:1.5.0  
swr.ap-southeast-3.myhuaweicloud.com/group/examples-bookinfo-  
productpage-v1:1.5.0
```

```
docker tag docker.io/istio/examples-bookinfo-details-v1:1.5.0 swr.ap-  
southeast-3.myhuaweicloud.com/group/examples-bookinfo-details-v1:1.5.0
```

```
docker tag docker.io/istio/examples-bookinfo-ratings-v1:1.5.0 swr.ap-  
southeast-3.myhuaweicloud.com/group/examples-bookinfo-ratings-v1:1.5.0
```

```
docker tag docker.io/istio/examples-bookinfo-reviews-v2:1.5.0 swr.ap-  
southeast-3.myhuaweicloud.com/group/examples-bookinfo-reviews-v1:1.5.1
```

```
docker tag docker.io/istio/examples-bookinfo-reviews-v3:1.5.0 swr.ap-  
southeast-3.myhuaweicloud.com/group/examples-bookinfo-reviews-v1:1.5.2
```

In the preceding commands, *swr.ap-southeast-3.myhuaweicloud.com* indicates the image repository address, and *group* indicates the organization name. Replace them with the actual values.

5. Push the images to the SWR.

```
docker push swr.ap-southeast-3.myhuaweicloud.com/group/examples-  
bookinfo-productpage-v1:1.5.0
```

```
docker push swr.ap-southeast-3.myhuaweicloud.com/group/examples-  
bookinfo-details-v1:1.5.0
```

```
docker push swr.ap-southeast-3.myhuaweicloud.com/group/examples-  
bookinfo-ratings-v1:1.5.0
```

```
docker push swr.ap-southeast-3.myhuaweicloud.com/group/examples-  
bookinfo-reviews-v1:1.5.1
```

```
docker push swr.ap-southeast-3.myhuaweicloud.com/group/examples-  
bookinfo-reviews-v1:1.5.2
```

6. Change the image type to **Public**. For details, see [Setting Image Attributes](#).

----End

## Buying a Mesh

**Step 1** Log in to the ASM console.

**Step 2** Click **Buy Mesh** in the upper right corner.

**Step 3** Configure the following parameters and retain the default value for other parameters.

- **Mesh Edition**  
Select **Basic**.
- **Mesh Name**  
Enter the mesh name.
- **Istio Version**  
Istio version supported by the mesh.
- **Cluster**  
Select the cluster created in [Step 4](#).
- **Mesh Control Plane Node**  
To achieve HA, select two or more nodes from different AZs.
- **Sidecar Configuration**  
Select the namespace named **default** and enable **Restart Existing Services**.

**Figure 1-5** Sidecar configuration

### Sidecar Configuration

Namespace Label the namespace with istio-injection=enabled. All pods in the namespace will be injected with an istio-proxy sidecar.

Cluster test-gpy   

Restart Existing Services



\* Injecting a sidecar will restart your existing pods and temporarily interrupt your services.

**Step 4** Review the mesh configuration in the **Configuration List** on the right of the page and click **Submit**.

It takes about 1 to 3 minutes to create a mesh. If the mesh status changes from **Installing** to **Running**, the mesh is successfully created.

----End

## Deploying Bookinfo in One Click

After the service mesh is enabled for a cluster, you can create a Bookinfo demo in just a few clicks. The procedure is as follows:

- Step 1** Log in to the ASM console.
- Step 2** Click the target mesh to view its details.
- Step 3** In the navigation pane, choose **Experience Tasks** and click **Try Now** in the Bookinfo task.
- Step 4** On the right of the page, set **Cluster** to the cluster where Bookinfo resides, set **Load Balancer** to a shared load balancer that is in the same VPC and subnet as the selected cluster, set an external port, enter the image repository address where the Bookinfo image is stored (for example, **swr.ap-southeast-3.myhuaweicloud.com/group**, where **group** indicates the organization name), and click **Install**.

**Figure 1-6** Installing Bookinfo

Click Install to create a Bookinfo experience template in one-click mode, including services such as productpage, details, reviews, and ratings. Only meshes of the latest version are supported.

Cluster

Load Balancer   [Create Load Balancer](#)

Only load balancers in VPC  where the cluster resides are supported. The query result is automatically filtered.

External Port

Repository Address

- Step 5** Wait until Bookinfo is created. After the creation is complete, click **Service Management**. The value of the **Configuration Diagnosis Result** column is **Normal**. The Bookinfo contains the productpage, details, reviews, and ratings services.

**Figure 1-7** Service list

Service Name	Configuration Diagnosis Result	Access Address
details	Normal	Internal http://details.default.svc:9080 HTTP
productpage	Normal	External http://:8080/productpage HTTP
		External http://:8080/ HTTP
Internal http://productpage.default.svc:9080/ HTTP		
ratings	Normal	Internal http://ratings.default.svc:9080 HTTP
reviews	Normal	Internal http://reviews.default.svc:9080 HTTP

----End

## Creating a Grayscale Release Task

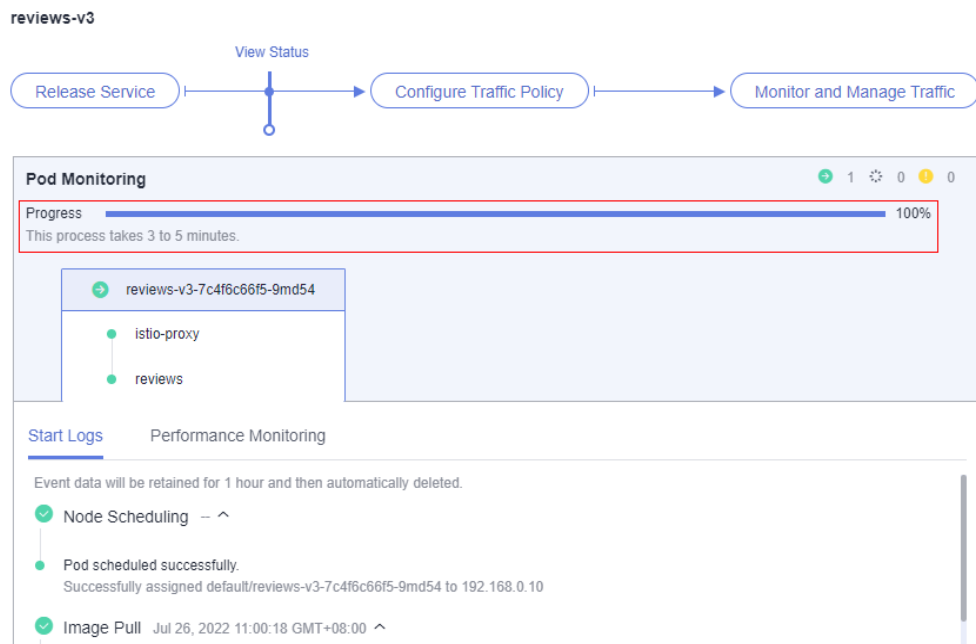
A new grayscale version of the **reviews** service of Bookinfo will be created. A grayscale policy will be configured to divert traffic of the default version to the new grayscale version.

The following steps will guide you to create a new version (v3) of the **reviews** service and divert 30% traffic of Bookinfo to this version.

### Deploying a grayscale version

- Step 1** In the navigation pane on the left, choose **Grayscale Release**. On the **Canary Release** area of the displayed page, click **Create Release Task**.
- Step 2** Configure basic information.
- **Task Name:** Enter a task name, for example, **reviews-v3**.
  - **Namespace:** Select the namespace to which the service belongs.
  - **Service:** Select **reviews** from the drop-down list box.
  - **Workload:** Select the workload to which the service belongs.
- Step 3** Configure grayscale version information.
- **Cluster:** Select the cluster to which the service belongs.
  - **Version:** Set this parameter as **v3**.
  - **Pods:** Retain the default value.
  - **Pod Configuration:** Set the image tag as **1.5.2** and retain the default value for other parameters.
- Step 4** Click **Release**. If the progress reaches 100%, the grayscale version is successfully released.

**Figure 1-8** Viewing the progress



----End

### Configuring a grayscale policy

Configure a grayscale policy for the grayscale version. A specified ratio of traffic will be diverted from the original version to the grayscale version.

**Step 1** After the grayscale version is deployed, click **Configure Traffic Policy**.

**Step 2** Configure a traffic policy.

**Policy Type:** The value can be **Based on traffic ratio** or **Based on request content**.

- **Based on traffic ratio:** A specified ratio of traffic will be directed to the grayscale version. For example, 80% of the traffic is directed to the original version, and 20% is directed to the grayscale version.
- **Based on request content:** Only the traffic that meets specific conditions will be directed to the grayscale version. For example, only users on the Windows operating system can access the grayscale version.

In this example, configure a traffic policy **based on traffic ratio** and set the traffic ratio of v3 to **20%**.

**Figure 1-9** Traffic policy

★ Traffic Ratio	Version	Traffic Ratio	Current Pods
	v1	80 %	1
	v3(grayScale version)	20 %	1

**Step 3** Click **Deliver Policy**.

**Step 4** On the **Service List** page, click the **Access Address** of the productpage service. Frequently refresh the book information page, and you can find that the **Book Reviews** area is switching between black stars (v1) and red stars (v3) and the ratio is nearly 4 to 1.

**Figure 1-10** v1 page

BookInfo Sample
Sign in

### The Comedy of Errors

Summary: [Wikipedia Summary](#); The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

Book Details

**Type:**  
paperback  
**Pages:**  
200  
**Publisher:**  
PublisherA  
**Language:**  
English  
**ISBN-10:**  
1234567890  
**ISBN-13:**  
123-1234567890

Book Reviews

An extremely entertaining play by Shakespeare. The slapstick humour is refreshing!

— Reviewer1

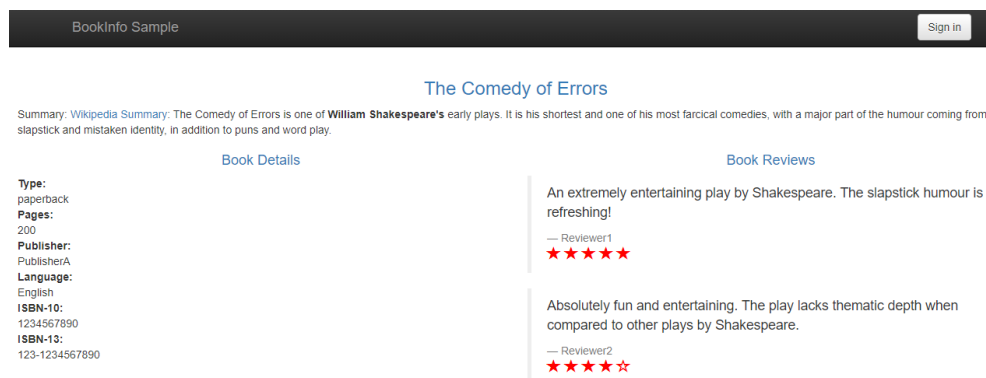
★★★★★

Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare.

— Reviewer2

★★★★☆

Figure 1-11 v3 page



----End

## Switching All Traffic to the Grayscale Version

Check whether the number of resources in v3 matches that in v1. After confirming that v3 is able to serve all the traffic of v1, switch all the traffic from v1 to v3.

**Step 1** On the **Monitor and Manage Traffic** page, click **Take Over All Traffic** next to v3.

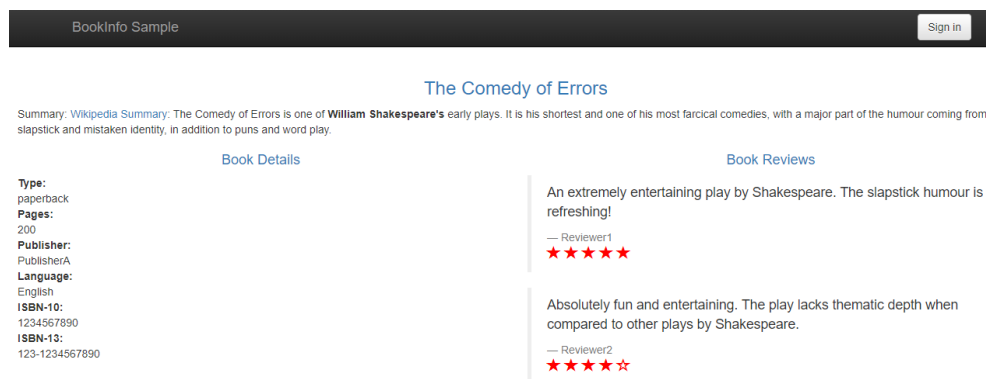
Figure 1-12 Taking over all traffic



**Step 2** Click **OK**.

A message indicating that the traffic is successfully switched is displayed in the upper right corner. Frequently refresh the Bookinfo page, and you can find that only red stars (v3) are used in the **Book Reviews** area.

Figure 1-13 v3 page



----End

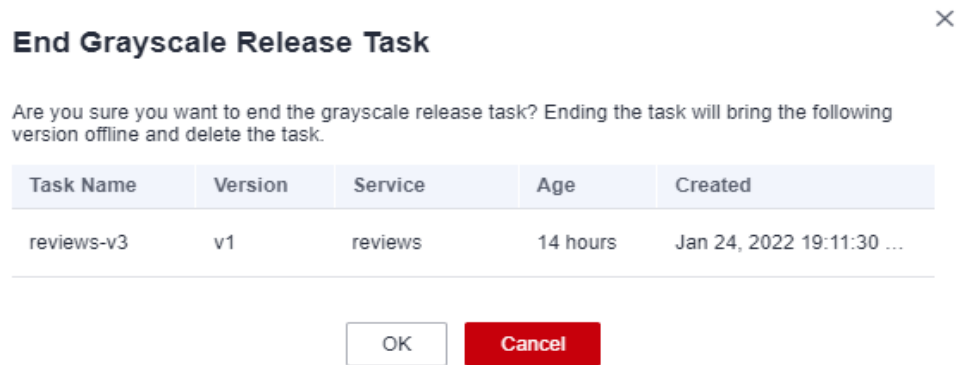
## Ending a Grayscale Release Task

After v3 takes over all the traffic of v1, bring v1 offline to release its resources.

**Step 1** On the **Monitor and Manage Traffic** page, click **End Task**.

**Step 2** Click **OK** to end the task, bring the original version offline, and delete the task.

**Figure 1-14** Ending a grayscale release task



Bringing a version offline will delete all its workloads and Istio configuration resources.

----End

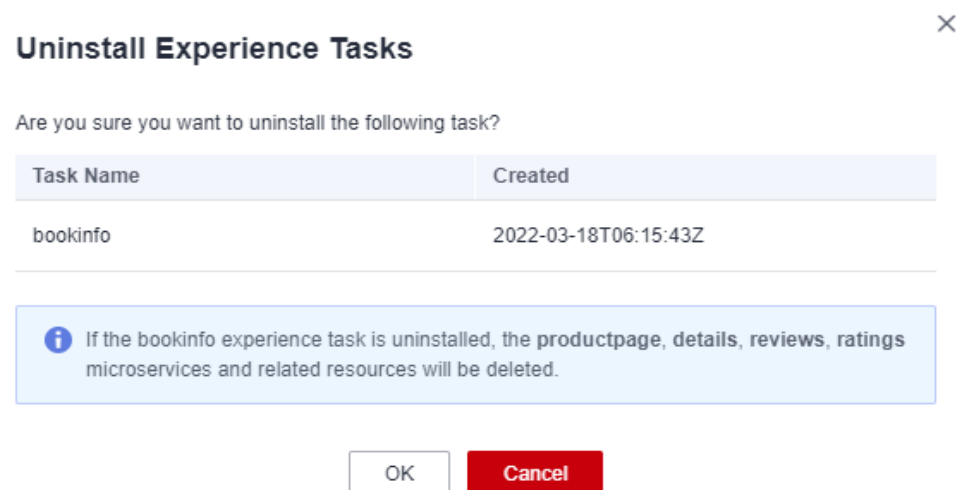
## Clearing Resources

This is the end of the demo of how to perform grayscale release using ASM. Delete the application and nodes in time to avoid unnecessary fees because node and application running incurs fees.

**Step 1** In the navigation pane, choose **Experience Tasks** and click **Uninstall** in the Bookinfo task.

**Step 2** Click **OK**. After the Bookinfo experience task is uninstalled, the productpage, details, reviews, and ratings services and related resources are automatically deleted.

**Figure 1-15** Uninstalling experience tasks





 **NOTE**

After an experience task is uninstalled, go to the CCE console and manually delete the workloads corresponding to the grayscale version of the service for which grayscale release has been completed.

**----End**

# 2 Enabling Istio for a Cluster

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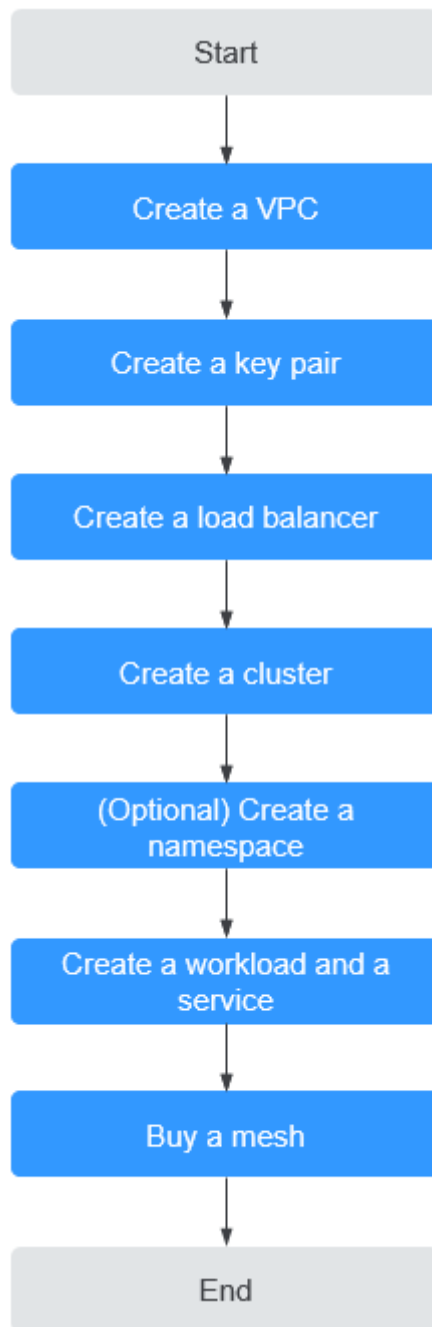
## 2.1 Overview

Providing a non-intrusive microservice governance solution, ASM supports full-lifecycle management and traffic management and is compatible with the Kubernetes and Istio ecosystems. It hosts functions such as load balancing, outlier detection, and rate limiting.

### Process Description

The process of enabling Istio for a cluster is shown in the following figure.

**Figure 2-1** Process of enabling Istio for a cluster



## 2.2 Preparations

Before enabling Istio for a cluster, perform the following operations.

### Creating a VPC

A VPC is an isolated virtual network environment on Huawei Cloud. You can create security groups and subnets, configure IP address ranges, specify bandwidth sizes, and assign Elastic IP addresses (EIPs) in a VPC.

- Step 1** Log in to the VPC console.
- Step 2** Click **Create VPC** in the upper right corner.
- Step 3** Retain default settings for parameters unless otherwise specified. Then, click **Create Now**.

For details, see [Creating a VPC](#).

----End

## Creating a Key Pair

Create a key pair for identity authentication upon remote node login.

- Step 1** Log in to the Elastic Cloud Server (ECS) console.
- Step 2** In the navigation pane, choose **Key Pair**. On the **Key Pair** page, click **Create Key Pair** in the upper right corner.
- Step 3** Enter a key pair name and click **OK**.
- Step 4** Manually or automatically download the private key file. The file name is the specified key pair name with a suffix of **.pem**. Securely store the private key file. In the dialog box displayed, click **OK**.

### NOTE

For security purposes, a key pair can be downloaded only once. Keep it secure to ensure successful login.

----End

## Creating a Load Balancer

A load balancer will be used as the external access entry of a service mesh. Traffic managed by a service mesh will be distributed by this load balancer to backend services.

- Step 1** Log in to the Elastic Load Balance (ELB) console.
- Step 2** Click **Buy Elastic Load Balancer** in the upper right corner.
- Step 3** Purchase a dedicated load balancer by referring to [Creating a Dedicated Load Balancer](#).
  - **Network Type:** Select **Public network**.
  - **VPC and Subnet:** Select the VPC and subnet created in [Creating a VPC](#) respectively.

**Figure 2-2** Buying an elastic load balancer

The screenshot displays the configuration options for purchasing an Elastic Load Balancing (ELB) instance. The configuration is as follows:

- Type:** Shared
- Region:** AF-Johannesburg
- Network Type:** Public network
- VPC:** vpc-default
- Subnet:** subnet-9e4e (192.168.0.0/...)
- Private IP Address:** Automatically-assigned IP ...
- EIP:** New EIP
- EIP Type:** Dynamic BGP
- Billed By:** Bandwidth (For heavy/stable traffic)
- Bandwidth:** 5 Mbit/s
- Free Anti-DDoS protection:** Enabled

----End

## Creating a Cluster

**Step 1** Log in to the Cloud Container Engine (CCE) console.

**Step 2** In the navigation pane, choose **Resource Management > Clusters**. On the displayed page, click **Buy** next to **CCE Cluster**.

For details about how to create a cluster, see [Buying a CCE Cluster](#).

**Step 3** On the **Configure** page, set the following parameters and retain the default values for other parameters:

- **Cluster Name:** Enter a cluster name, for example, **cluster-test**.
- **VPC and Subnet:** Select the VPC and subnet created in [Creating a VPC](#).

**Step 4** Click **Next: Create Node** and set the parameters as prompted. Set **Specifications** and **Login Mode** as follows, and retain the default settings for the other parameters.

- **Specifications:** 4 vCPUs and 8 GB memory.
- **Login Mode:** Select the key pair created in [Creating a Key Pair](#) for identity authentication upon remote node login.

**Step 5** Click **Next: Install Add-on**, and select the add-ons to be installed in the **Install Add-on** step.

**System resource add-on** must be installed. **Advanced functional add-on** is optional.

**Step 6** Click **Next: Confirm**. Read the product constraints and select **I am aware of the above limitations**. Review the configured parameters and specifications.

**Step 7** **Submit** the order.

If the cluster will be billed on a **yearly/monthly** basis, click **Pay Now** and follow on-screen prompts to pay the order.

It takes about 6 to 10 minutes to create a cluster. You can click **Back to Cluster List** to perform other operations on the cluster or click **Go to Cluster Events** to view the cluster details.

----End

## (Optional) Creating a Namespace

**Step 1** Log in to the Cloud Container Engine (CCE) console.

**Step 2** In the navigation pane, choose **Resource Management > Namespaces**. Then, click **Create Namespace** in the upper right corner.

**Step 3** Enter the namespace name and select the created cluster.

**Step 4** Click **OK**.

----End

## Creating a Workload and a Service

**Step 1** Log in to the Cloud Container Engine (CCE) console.

**Step 2** In the navigation pane, choose **Workloads > Deployments**. On the page displayed, click **Create Deployment**.

**Step 3** For details about how to create a workload and a Service, see [Creating a Deployment](#).

----End

## 2.3 Buying a Mesh

ASM allows you to create a Basic mesh, which is a standard mesh available for commercial use.

### Procedure

**Step 1** Log in to the ASM console and click **Buy Mesh**.

**Step 2** Configure the following parameters and retain the default value for other parameters.

- **Mesh Edition**  
The default value is Basic edition.
- **Mesh Name**  
Enter the mesh name.

- **Istio Version**  
Istio version supported by the mesh.
- **Cluster**  
Select the cluster created in [Creating a Cluster](#).
- **Mesh Control Plane Node**  
To achieve HA, select two or more nodes from different AZs.

**Step 3** Review the mesh configuration in the **Configuration List** on the right of the page and click **Submit**.

It takes about 1 to 3 minutes to create a mesh. If the mesh status changes from **Installing** to **Running**, the mesh is successfully created.

----End

# 3 Configurable Grayscale Release

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## 3.1 Overview

Grayscale release is a smooth iteration mode for version upgrade. During the upgrade, some users use the later version, while other users continue to use the earlier version. After the later version is stable and ready, it gradually takes over all the live traffic.

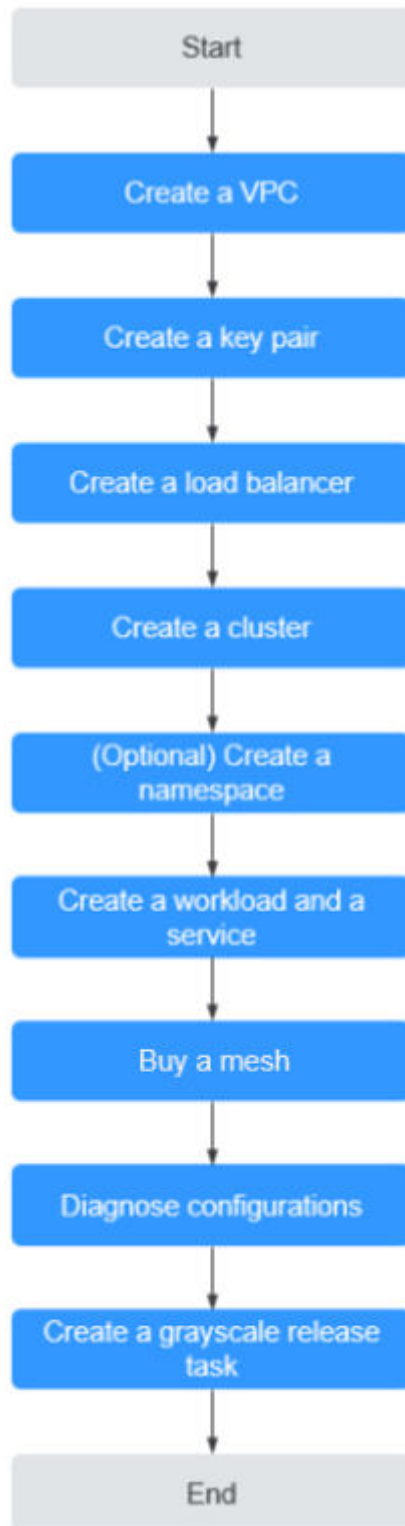
This section describes how to create a VPC and a grayscale version to complete a grayscale release.

### Process Description

The grayscale release process is shown in the following figure:



**Figure 3-1** Process of creating a grayscale release task



## 3.2 Preparations

Before creating a grayscale release task, complete the following preparations.

## Creating a VPC

A VPC is an isolated virtual network environment on Huawei Cloud. You can create security groups and subnets, configure IP address ranges, specify bandwidth sizes, and assign Elastic IP addresses (EIPs) in a VPC.

- Step 1** Log in to the VPC console.
- Step 2** Click **Create VPC** in the upper right corner.
- Step 3** Retain default settings for parameters unless otherwise specified. Then, click **Create Now**.

For details, see [Creating a VPC](#).

----End

## Creating a Key Pair

Create a key pair for identity authentication upon remote node login.

- Step 1** Log in to the Elastic Cloud Server (ECS) console.
- Step 2** In the navigation pane, choose **Key Pair**. On the **Key Pair** page, click **Create Key Pair** in the upper right corner.
- Step 3** Enter a key pair name and click **OK**.
- Step 4** Manually or automatically download the private key file. The file name is the specified key pair name with a suffix of **.pem**. Securely store the private key file. In the dialog box displayed, click **OK**.

### NOTE

For security purposes, a key pair can be downloaded only once. Keep it secure to ensure successful login.

----End

## Creating a Load Balancer

A load balancer will be used as the external access entry of a service mesh. Traffic managed by a service mesh will be distributed by this load balancer to backend services.

- Step 1** Log in to the Elastic Load Balance (ELB) console.
- Step 2** Click **Buy Elastic Load Balancer** in the upper right corner.
- Step 3** Purchase a dedicated load balancer by referring to [Creating a Dedicated Load Balancer](#).
  - **Network Type:** Select **Public network**.
  - **VPC and Subnet:** Select the VPC and subnet created in [Creating a VPC](#) respectively.

**Figure 3-2** Buying an elastic load balancer

\* Type: Shared

\* Region: AF-Johannesburg

Regions are geographic areas isolated from each other. Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.

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\* Network Type: Public network Private network ?

\* VPC: vpc-default View VPC

\* Subnet: subnet-9e4e (192.168.0.0/...) View Subnet Available private IP addresses: 245

\* Private IP Address: Automatically-assigned IP ...

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\* EIP:  New EIP  Use existing ?

\* EIP Type: Dynamic BGP

\* Billed By: Bandwidth (For heavy/stable traffic) Traffic (For light/sharply fluctuating traffic)

Billed based on usage duration and bandwidth size.

\* Bandwidth: 1 2 5 10 100 200 Custom - 5 +

The value ranges from 1 to 2,000 Mbit/s.

Free Anti-DDoS protection

----End

## Creating a Cluster

**Step 1** Log in to the Cloud Container Engine (CCE) console.

**Step 2** In the navigation pane, choose **Resource Management > Clusters**. On the displayed page, click **Buy** next to **CCE Cluster**.

For details about how to create a cluster, see [Buying a CCE Cluster](#).

**Step 3** On the **Configure** page, set the following parameters and retain the default values for other parameters:

- **Cluster Name:** Enter a cluster name, for example, **cluster-test**.
- **VPC and Subnet:** Select the VPC and subnet created in [Creating a VPC](#).

**Step 4** Click **Next: Create Node** and set the parameters as prompted. Set **Specifications** and **Login Mode** as follows, and retain the default settings for the other parameters.

- **Specifications:** 4 vCPUs and 8 GB memory.
- **Login Mode:** Select the key pair created in [Creating a Key Pair](#) for identity authentication upon remote node login.

**Step 5** Click **Next: Install Add-on**, and select the add-ons to be installed in the **Install Add-on** step.

**System resource add-on** must be installed. **Advanced functional add-on** is optional.

**Step 6** Click **Next: Confirm**. Read the product constraints and select **I am aware of the above limitations**. Review the configured parameters and specifications.

**Step 7** **Submit** the order.

If the cluster will be billed on a **yearly/monthly** basis, click **Pay Now** and follow on-screen prompts to pay the order.

It takes about 6 to 10 minutes to create a cluster. You can click **Back to Cluster List** to perform other operations on the cluster or click **Go to Cluster Events** to view the cluster details.

----End

## (Optional) Creating a Namespace

**Step 1** Log in to the Cloud Container Engine (CCE) console.

**Step 2** In the navigation pane, choose **Resource Management > Namespaces**. Then, click **Create Namespace** in the upper right corner.

**Step 3** Enter the namespace name and select the created cluster.

**Step 4** Click **OK**.

----End

## Creating a Workload and a Service

**Step 1** Log in to the Cloud Container Engine (CCE) console.

**Step 2** In the navigation pane, choose **Workloads > Deployments**. On the page displayed, click **Create Deployment**.

**Step 3** For details about how to create a workload and a Service, see [Creating a Deployment](#).

----End

## Buying a Mesh

**Step 1** Log in to the ASM console and click **Buy Mesh**.

**Step 2** Set **Mesh Name** to **asmtest**, select the cluster named **cluster-test** created in [Creating a Cluster](#), and select a node on which the Istio control plane is installed. Select two or more nodes in different AZs.

**Step 3** Click **Show Advanced Settings**. In the **Sidecar Configuration** area, select the namespace named **default** and enable **Restart Existing Services**.

**Step 4** Set **Observability Configuration** to **Connect with APM**.

**Step 5** Review the mesh configuration in the **Configuration List** on the right of the page and click **Pay Now**.

It takes about 1 to 3 minutes to create a mesh. If the mesh status changes from **Installing** to **Running**, the mesh is successfully created.

----End

## Diagnosing Configurations


ASM diagnoses all services in a managed cluster. Grayscale release can be performed only for services that are diagnosed as normal.

- Step 1** Log in to the ASM console, click the mesh named **asmtest** to view its details.
- Step 2** In the navigation pane on the left, choose **Service Management**, select **Namespace: default** from the drop-down list box, and view the **Configuration Diagnosis Result** of **servicetest**.
- Step 3** If the **Configuration Diagnosis Result** is **Abnormal**, click **Fix** to fix the issues.

----End

## 3.3 Grayscale Release

### Creating a Grayscale Release Task


- Step 1** Log in to the ASM console, click  in the **asmtest** mesh.
- Step 2** Set **Task Name** to **test**, configure the basic information and grayscale version information, and set **Service** to the **servicetest** service created in [Creating a Workload and a Service](#). **Workload** is automatically set to **deptest**. Click **Release**.


**Figure 3-3** Creating a grayscale release task

### Perform Grayscale Release

#### Basic Information

\* Grayscale Release Form

 **Canary Release**  
Smooth iteration

 **Blue-Green Deployment**  
No downtime. Fewer risks.

For the differences between the grayscale release forms, see [Release Form Comparison](#).

\* Task Name:

\* Namespace:  C

\* Service:  C

Only services that are not in grayscale release are displayed.

\* Workload:

\* Version: v1

#### Grayscale Version Information


\* Cluster:

\* Version:

\* Pods:  Maximum: 4986

Pod Configuration

**container-0**

Image Name  tomcat

\* Image Tag:  C

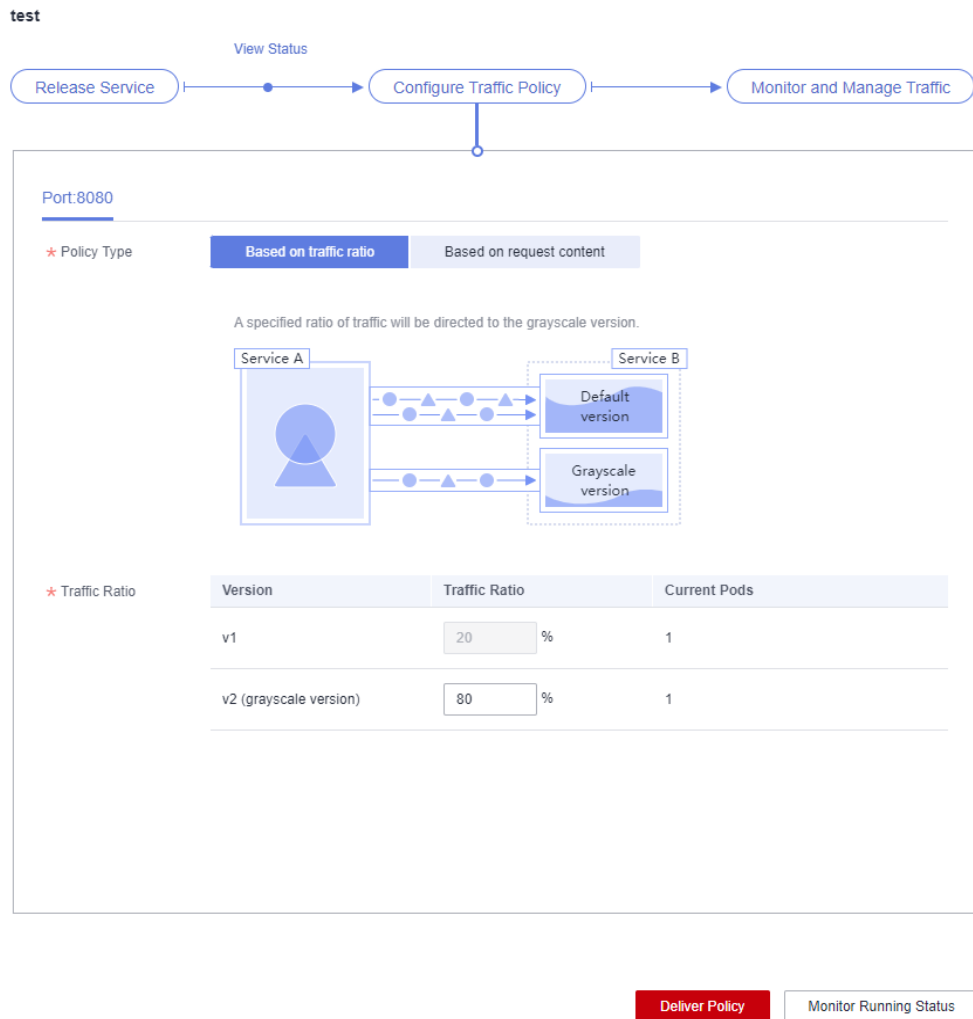
Release Cancel

#### NOTE

If you cannot select **servicetest**, check whether the service is normal. If the service status is abnormal, fix the issues and try again.

**Step 3** Click **Configure Traffic Policy**, set policy type to **Based on traffic ratio**, and set the **traffic ratio** of v2 to 80%.

**Figure 3-4** Configuring a traffic policy



**Step 4** Click **Deliver Policy**.

It takes several seconds for the traffic policy to take effect. You can view the running status of the grayscale version on the **View Status** page.

----End

**Switching All Traffic to the Grayscale Version**

Check whether the number of resources in v2 matches that in v1. After confirming that v2 is able to serve all the traffic of v1, switch all the traffic from v1 to v2.

**Step 1** On the **Grayscale Release** page, click **test** and then click **Monitor and Manage Traffic**.

**Step 2** Click **Take Over All Traffic** next to v2.

**Figure 3-5** Taking over all traffic



**Step 3** Click **OK**. A message is displayed in the upper right corner, indicating that the traffic is taken over successfully.

----End

## Bringing the Original Version Offline

After v2 takes over all the traffic of v1, bring v1 offline to release its resources.

**Step 1** On the **Grayscale Release** page, click **test** and then click **Monitor and Manage Traffic**.

**Step 2** On the displayed page, when the traffic ratio of v2 is **100%**, v2 has taken over all traffic of v1. Click **Terminate Task**.

**Step 3** Click **OK**.

After the grayscale task is terminated, the v1 version is brought offline and the test grayscale task is deleted.

----End