Auto Scaling

# Best Practices

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# 1 Setting Up an Automatically Scalable Discuz! Forum Website

## Application Scenarios

Discuz! is one of the most mature and widely used forum software programs. Website traffic reaches its top in peak hours. If a forum website is deployed on multiple servers to cope with peak hours, some servers must be left unused at other times. This increases the costs and leads to a waste of resources.

AS helps you address the preceding problems. After you use AS on the servers for deploying a forum website, AS maintains the proper running of the website and reduces costs by automatically adjusting the number of servers based on the predefined scaling policy. This section describes how to use AS to automatically increase or reduce the number of ECSs for a web service, for example, Discuz!.

## Solution Introduction

**Table 1-1** lists the steps required to set up an automatically scalable Discuz! forum website. This section focuses on how to implement AS. The increase or decrease of website traffic causes the rise or drop of the ECS CPU usage. You can configure two CPU usage alarm policies, one for increasing one ECS when the CPU usage exceeds 70% and the other for reducing one ECS when the CPU usage is less than 30%. In this way, there will remain a proper number of ECSs for the forum website.

**Table 1-1** Setting up a Discuz! forum

| Step | Category | Substep | Description |
| --- | --- | --- | --- |
| Setting up a website | Applying for services | Applying for a VPC | Apply for a VPC, for example, **vpc-DISCUZ**, that provides network services for the ECS on which the website is deployed. |
| | | Purchasing an EIP | Purchase an EIP that allows the ECS to access the Internet. |

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| Step | Category | Substep | Description |
| --- | --- | --- | --- |
| | | Creating a security group and adding a security group rule | To ensure network security, create a security group, for example, **sg-DISCUZ**, to control network access. |
| | | Purchasing ECSs | Buy two ECSs, for example, discuz01 for deploying the forum database and discuz02 for deploying the forum. Bind the purchased EIP to the ECS discuz01 when purchasing discuz01. |
| | Configuring the ECSs | Installing the database on discuz01 | Install MySQL on discuz01, start the database, and configure it to automatically start upon ECS startup. |
| | | Deploying the website code on discuz02 | Unbind the EIP from discuz01, bind it to discuz02, and deploy a web environment and website code on discuz02. |
| | Configuring features | Unbinding the EIP | To save EIP resources, release the EIP bound to discuz02 before using the load balancing service. |
| | | Configuring ELB | Purchase an enhanced load balance listener, for example, **elb-DISCUZ**, to balance the website traffic in an AS group. |
| | | Creating an image | To ensure that the ECSs to be added to the AS group automatically deploy the web environment and website code, create an image, for example, **discuz_centos6.5 (40 GB)** based on discuz02. The image is used as a private one for creating an AS configuration. |
| Implementing AS | N/A | Creating an AS configuration | An AS configuration is an ECS template in the AS group, specifying specifications of the ECS to be added. Create an AS configuration, for example, **as-config-discuz**. |
| | | Creating an AS group | An AS group is the basis for performing scaling actions. Create an AS group, for example, **as-group-discuz**. |


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| Step | Category | Substep | Description |
| --- | --- | --- | --- |
| | | Creating an AS policy | An AS policy triggers scaling actions. Configure two CPU usage alarm policies for increasing or reducing the number of ECSs when website traffic rises or drops. |
| | | Manually adding an ECS to an AS group | To ensure that discuz02 and the ECSs to be added to the AS group carry forum services together, manually add discuz02 to the AS group. |
| | | Configuring **Min. Instances** | **Min. Instances** defines the minimum number of ECSs in an AS group. When the parameter is set to **1**, there is at least one ECS in the AS group. The ECS discuz02 is manually added and has the lowest priority to be removed when **Instance Removal Policy** is configured. Therefore, configuring **Min. Instances** prevents discuz02 from being removed. |
| Visiting the forum website | Verifying the configuration | Checking whether the forum website can be accessed | Obtain the EIP bound to the load balancer and visit http://*EIP*/forum.php. If the forum website is accessible, the configurations have taken effect. |

## Preparations

Follow the instructions provided in **Table 1-1** to set up the website. For details, see **Setting Up a Discuz! Forum**.

## Creating an AS Configuration

An AS configuration specifies the specifications of ECSs to be added. To enable the ECSs to automatically support web services, use the image discuz_centos6.5 (40 GB) and ensure the parameter settings in the AS configuration the same as those of discuz02.

1. Log in to the management console. Under **Computing**, click **Auto Scaling**.
2. On the **Instance Scaling** page, click **Create AS Configuration**. Configure parameters shown in **Figure 1-1** and **Figure 1-2**. Retain default settings for other parameters. For details, see **Table 1-2**.

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**Figure 1-1** AS configuration parameters (1)

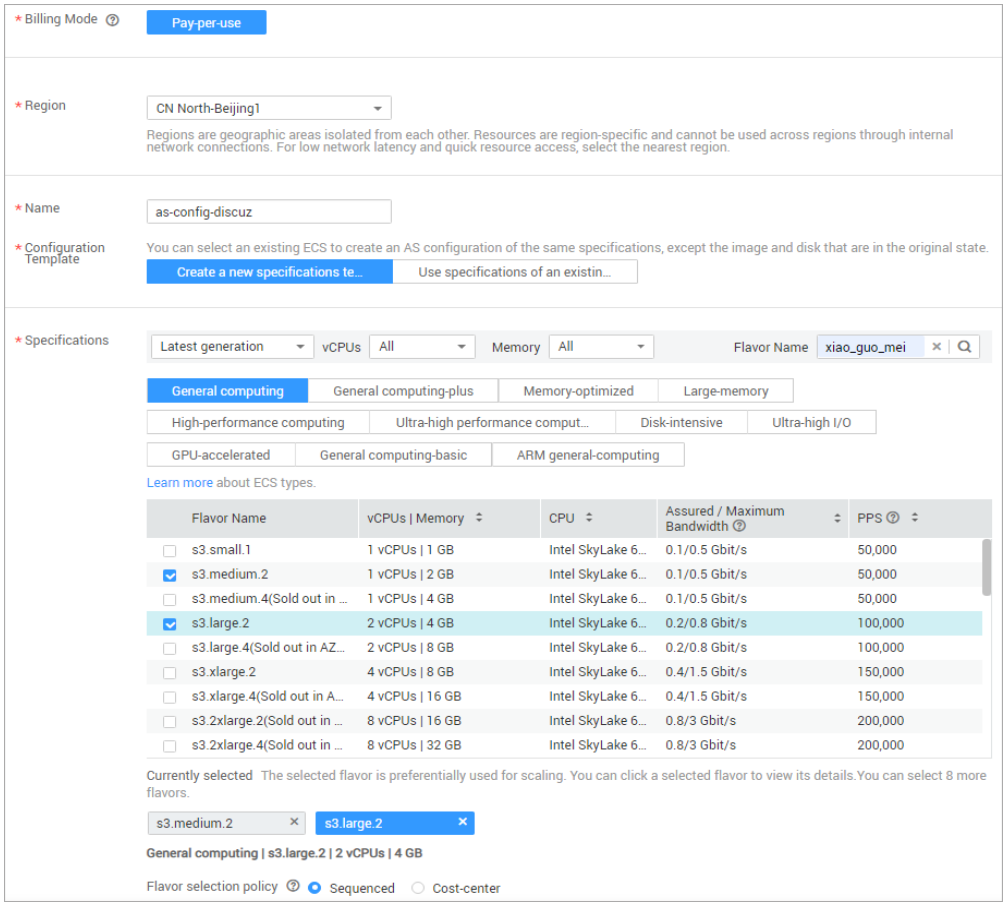


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**Figure 1-2** AS configuration parameters (2)

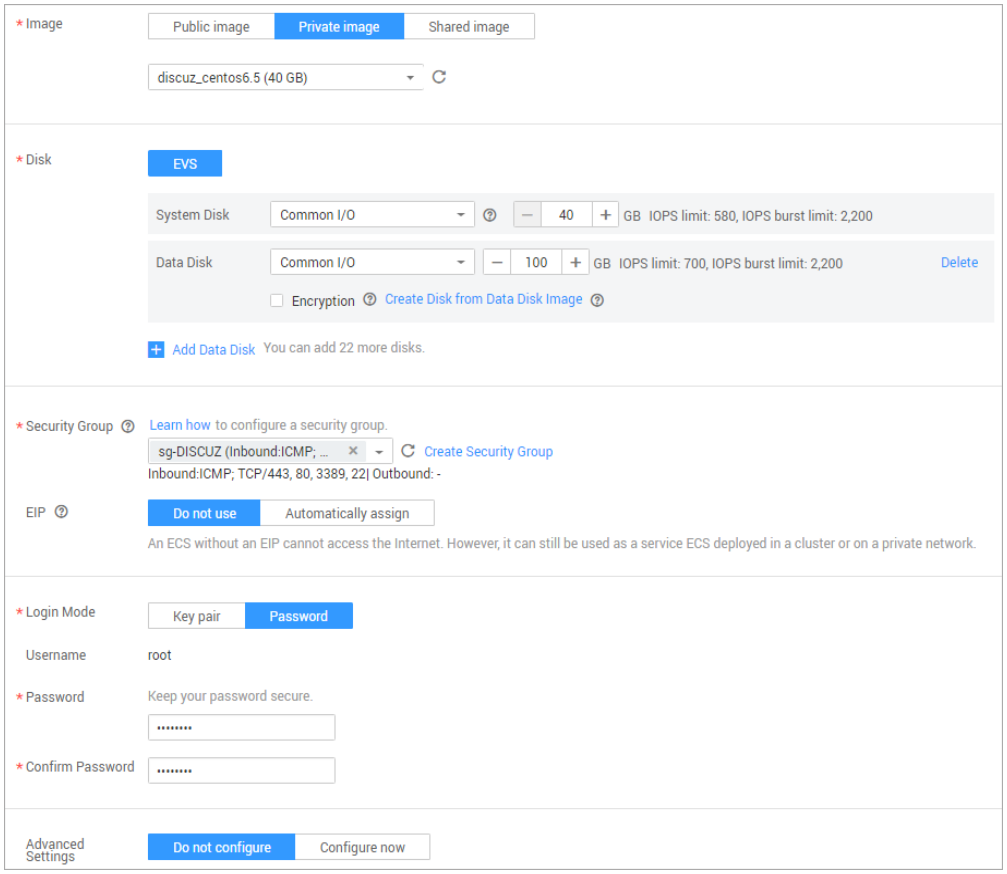


**Table 1-2** Key AS configuration parameters

| Parameter | Description | Example Value |
| --- | --- | --- |
| Configuration Template | Select **Create a new specifications template** and configure the parameters, such as ECS type, vCPUs, memory, image, and disk, to create a new AS configuration. | Create a new specifications template |
| Specifications | You can select multiple flavors to minimize the probability of capacity expansion failures due to insufficient resources of a flavor. Set **Flavor Selection Policy** to **Sequenced** or **Cost-center** as required. | s3.medium.2<br>s3.large.2 |
| Image | Specifies the software and system configuration template for the instances in an AS group. | discuz_centos6.5 (40 GB) |


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| Parameter | Description | Example Value |
| --- | --- | --- |
| Disk | Stores data and manages the stored data for the instances in an AS group. | System disk: Common I/O, 40 GB<br>Data disk: Common I/O, 100 GB |
| Security Group | Controls instance access within or between security groups by defining access rules. | sg-DISCUZ |
| EIP | Not required if you have enabled a load balancer in an AS group. The system automatically adds instances in the AS group to the load balancer. These instances will provide services via the EIP bound to the load balancer. | Do not use |

3. After setting the parameters, click **Create Now**.

## Creating an AS Group

1. Configure parameters shown in **Figure 1-3** and **Figure 1-4**. Retain default settings for other parameters. For details, see **Table 1-3**.


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**Figure 1-3** AS group parameters (1)

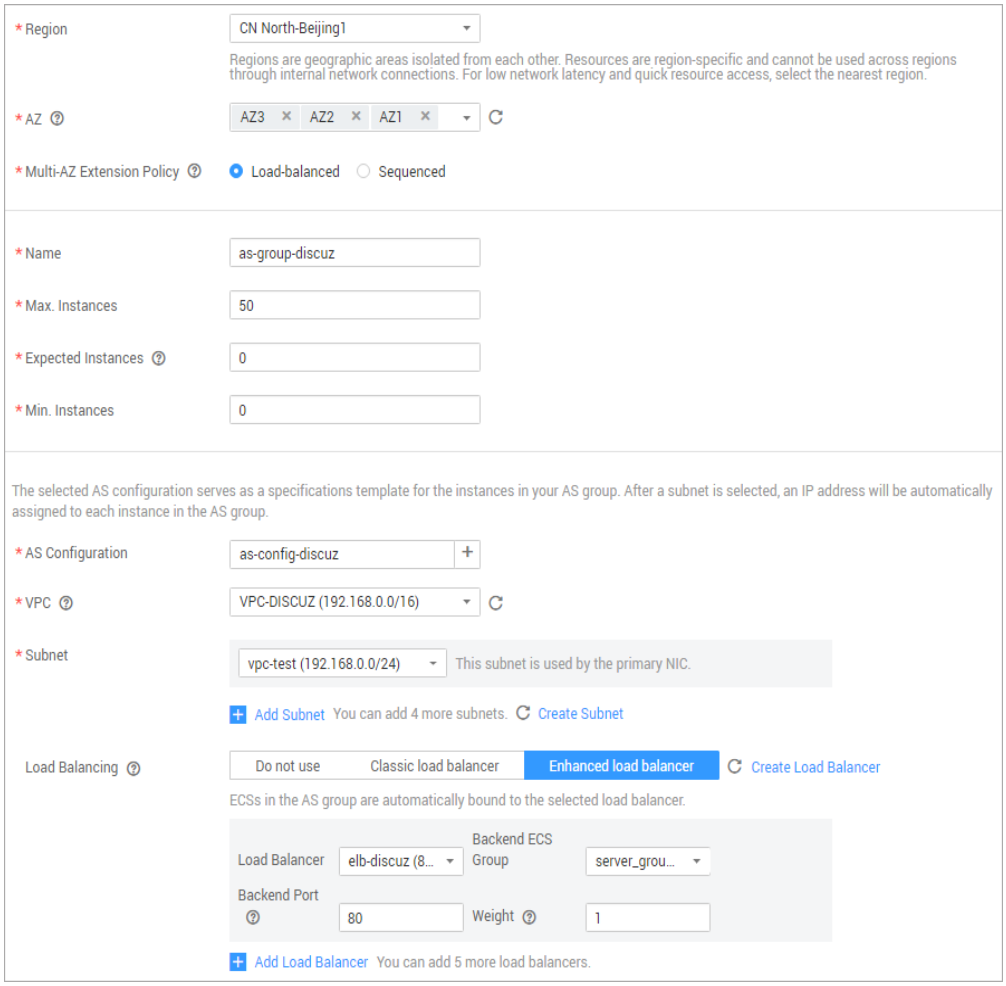


**Figure 1-4** AS group parameters (2)

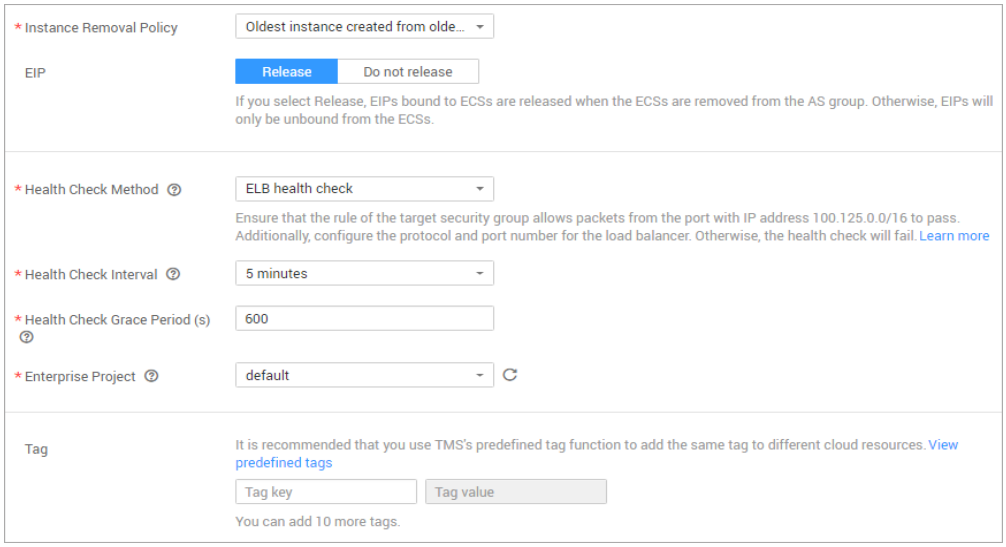


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**Table 1-3** Key AS group parameters

| Parameter | Description | Example Value |
| --- | --- | --- |
| Max. Instances | Specifies the maximum number of instances in an AS group. | 50 |
| Expected Instances | Specifies the expected number of instances in an AS group. The ECSs in this practice are manually added to the AS group. To prevent scaling actions before the manually adding, set **Expected Instances** to **0**. | 0 |
| Min. Instances | Specifies the minimum number of instances in an AS group. | 0 |
| VPC | Provides the network used by instances in an AS group. Ensure that the parameter value is the same as the VPC in which discuz02 is deployed. | VPC-DISCUZ |
| Subnet | Manages networks in the VPC. Select the subnet created when you apply for the VPC. | vpc-test |
| Load Balancing | Evenly distributes traffic to instances in an AS group. A backend port is a service port on which a backend ECS listens for traffic, for example, set **Backend Port** to **80** and **Weight** to **1**. | Enhanced load balancer |
| Health Check Method | **ELB health check** is recommended, in which heartbeat messages are sent to backend ECSs for check. | ELB health check |

2. After setting the parameters, click **Create Now**.
3. Back to the AS group list. The AS group is successfully created if its status changes to **Enabled**.

## Creating an AS Policy

To automatically scale ECSs, configure two alarm policies to monitor CPU usage. One (**as-policy-discuz01**) is used to increase the number of ECSs when the website traffic rises, and the other (**as-policy-discuz02**) is used to reduce the number of ECSs when the website traffic drops.

1. Locate the row containing the created AS group **as-group-discuz** and click **View AS Policy** in the **Operation** column.

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2. Click **Add AS Policy** and configure parameters shown in **Figure 1-5** and **Figure 1-6** for **as-policy-discuz01**. When the system detects that the CPU usage exceeds 70% for three consecutive times, **as-policy-discuz01** is triggered and an ECS is added to the AS group.

**Figure 1-5** as-policy-discuz01 parameters (1)

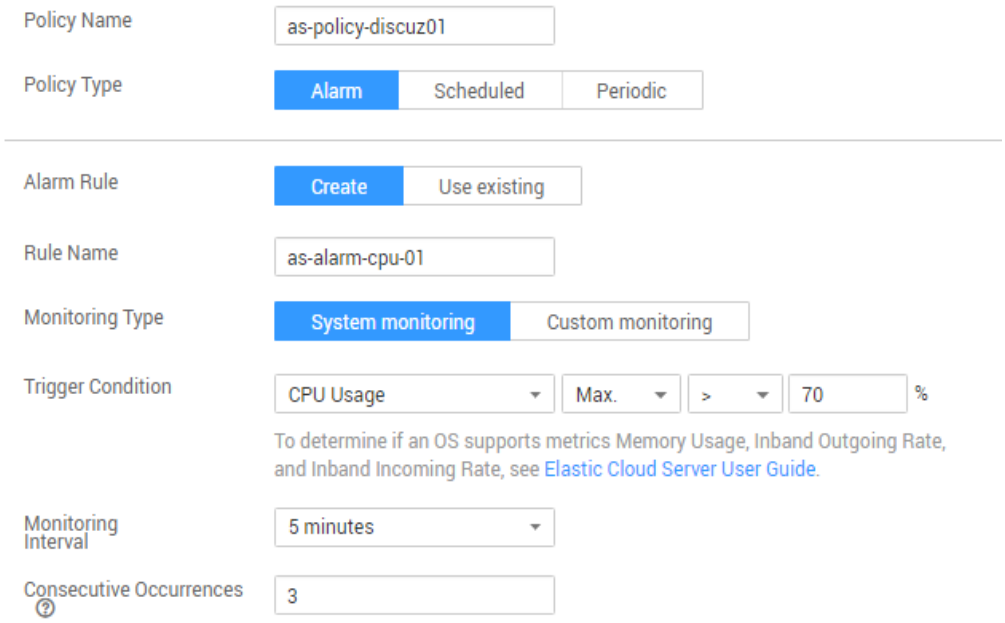


**Figure 1-6** as-policy-discuz01 parameters (2)




3. Click **OK**.
4. Click **Add AS Policy** again and configure parameters shown in **Figure 1-7** and **Figure 1-8** for **as-policy-discuz02**. When the system detects that the CPU usage is lower than 30% for three consecutive times, **as-policy-discuz02** is triggered and an ECS is removed from the AS group.

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**Figure 1-7** as-policy-discuz02 parameters (1)

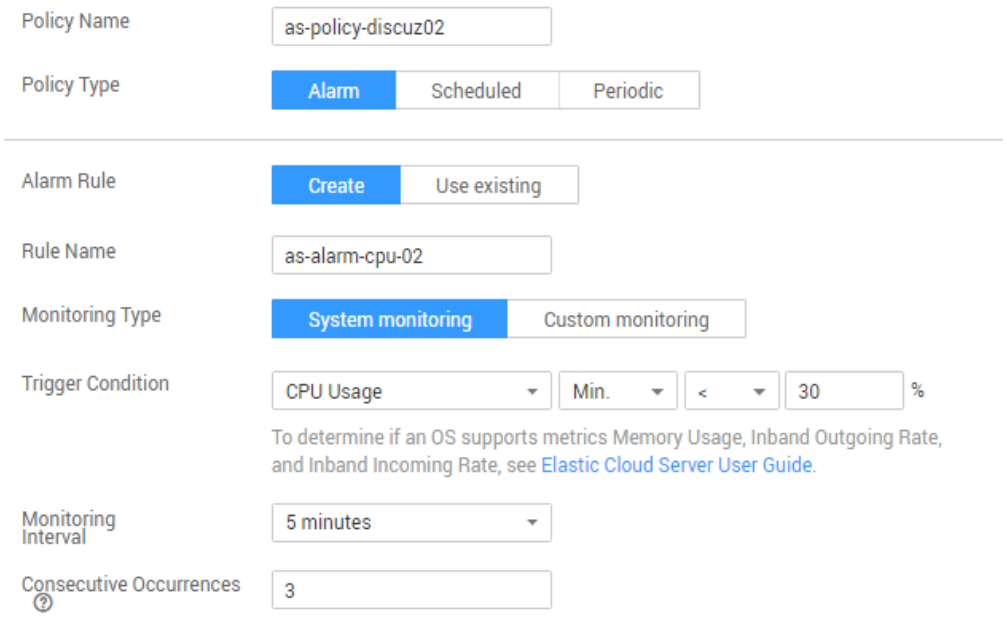
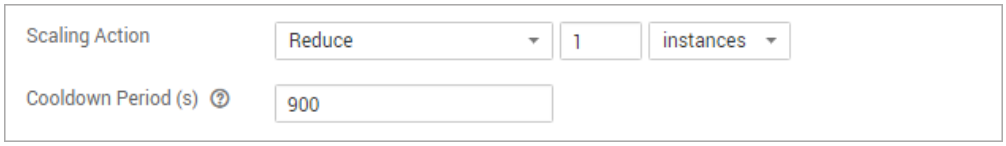



**Figure 1-8** as-policy-discuz02 parameters (2)



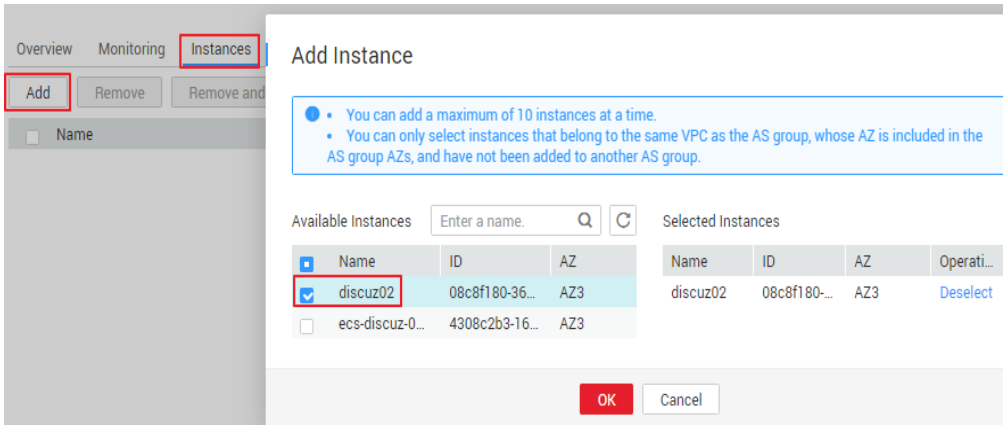

5. Click **OK**.
6. Back to the AS policy list. The AS policies are successfully created if their statuses change to **Enabled**.

## Manually Adding an ECS to an AS Group

Perform the following operations to manually add ECS **discuz02** to the AS group:

1. Click the name of the AS group **as-group-discuz** to switch to the page providing details about the AS group.
2. Click the **Instances** tab and manually add **discuz02** to the AS group.

**Figure 1-9** Adding discuz02 to the AS group

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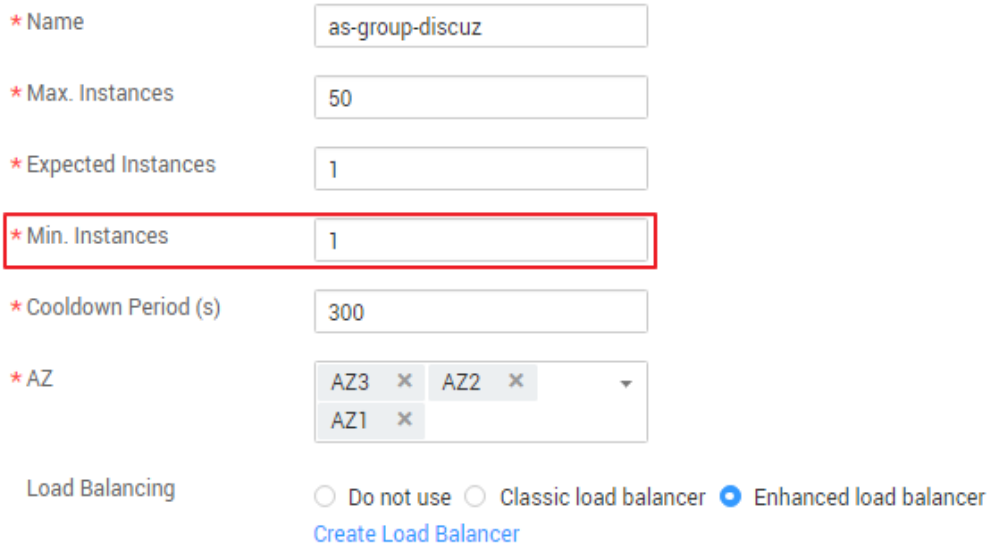
## Changing the Minimum Number of Instances

To ensure that **discuz02** is not removed from the AS group, perform the following operations to change the minimum number of instances:

1. Click the name of AS group **as-group-discuz** to switch to the page providing details about the AS group.
2. Click **Modify** in the upper right corner of the page. Set **Min. Instances** to **1**, as shown in **Figure 1-10**.

   **Figure 1-10** Changing the minimum number of instances




3. Click **OK**.

## Verifying Configurations

Check whether the forum website can be used. If the CPU usage of ECSs in the AS group remains higher than 70%, as shown on the **Monitoring** tab of the page providing details about the AS group, an ECS will be automatically added to the AS group (shown on the **Scaling Actions** tab). If the CPU usage remains lower than 30% and the AS group contains at least two ECSs, an ECS will be automatically removed from the AS group. If not, contact technical support to locate the fault.

## Practice Expansion

- To deploy new applications on ECSs, use AS lifecycle hooks to perform customized operations on the instances to be added to or removed from an AS group. For details, see **Managing Lifecycle Hooks**.
- To modify the specifications of ECSs in an AS group, create a new AS configuration. For details, see **Using a New Specifications Template to Create an AS Configuration**. Then, replace the AS configuration by following the instructions provided in **Replacing an AS Configuration in an AS Group**.

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