Auto Scaling

Best Practice

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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 sitting idle 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 an RDS for MySQL DB instance 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 ECS instances to be added. To enable the instances to automatically carry 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 **Compute**, click **Auto Scaling**.
2. On the **Instance Scaling** page, click **Create AS Configuration**.

   Configure parameters listed in **Table 1-2**. Retain default settings for other parameters.

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Table 1-2 Key AS configuration parameters

Parameter	Description	Example Value
Configuration Template	Select **Create new template** and configure the parameters, such as ECS type, vCPUs, memory, image, and disk, to create an AS configuration.	Create new 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-centric** as required.	s3.medium.2 s3.large.2
Image	Specifies the software and system configuration template for the instances in an AS group.	discuz_centos6.5 (40 GB)
Disk	Stores data and manages the stored data for the instances in an AS group.	System disk: high I/O, 40 GB Data disk: high I/O, 100 GB
Security Group	Controls ECS 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 associates 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. Click **Create AS Group**.

   Configure parameters listed in **Table 1-3**. Retain default settings for other parameters.

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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. On the displayed page, click **Add AS Policy**.

   Configure parameters listed in **Table 1-4** 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.

   Table 1-4 Key parameters for creating AS policy **as-policy-discuz01**

Parameter	Description	Example Value
Policy Name	Specifies the name of the AS policy to be created.	as-policy-discuz01
Policy Type	Select **Alarm**.	Alarm
Alarm Rule	Specifies whether a new alarm rule is to be created (**Create**) or an existing alarm rule will be used (**Use existing**).	Create
Rule Name	Specifies the name of the alarm rule.	as-alarm-cpu-01
Monitoring Type	Specifies the type of monitoring metrics, which can be **System monitoring** or **Custom monitoring**. Select **System monitoring**.	System monitoring
Trigger Condition	Select monitoring metrics supported by AS and set alarm conditions for the metrics.	CPU Usage Max. >70%
Monitoring Interval	Specifies the interval at which the alarm status is updated based on the alarm rule.	5 minutes
Consecutive Occurrences	Specifies the number of sampling points when an alarm is triggered.	3

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Param eter	Description	Example Value
Scaling Action	Specifies an action and the number or percentage of instances. The following scaling action options are available: ● Add Adds instances to an AS group when the scaling action is performed. ● Reduce Removes instances from an AS group when the scaling action is performed. ● Set to Sets the expected number of instances in an AS group to a specified value.	Add 1 instance
Cooldo wn Period	To prevent an alarm-based policy from being triggered repeatedly by the same event, configure a cooldown period.	900

3. Click **OK**.

4. Click **Add AS Policy** again and create AS policy **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.

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.

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 the AS group **as-group-discuz** to switch to the page providing details about the AS group.

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2. Click **Modify** in the upper right corner of the page. Set **Min. Instances** to **1**.

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 Extensions

- 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 first. For details, see **Creating an AS Configuration from a New Specifications Template**. Then, replace the AS configuration used by the AS group with the one you created. For details, see **Changing the AS Configuration for an AS Group**.