Alibaba Cloud

Server Migration Center
Product Introduction

Alibaba Cloud

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Document conventions

Style	Description	Example
⚠ Danger	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	⚠ **Danger:** Resetting will result in the loss of user configuration data.
🔔 Warning	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	🔔 **Warning:** Restarting will cause business interruption. About 10 minutes are required to restart an instance.
🔊 Notice	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	🔊 **Notice:** If the weight is set to 0, the server no longer receives new requests.
⑦ Note	A note indicates supplemental instructions, best practices, tips, and other content.	⑦ **Note:** You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click **Settings> Network> Set network type**.
Bold	Bold formatting is used for buttons , menus, page names, and other UI elements.	Click **OK**.
Courier font	Courier font is used for commands	Run the `cd /d C:/window` command to enter the Windows system folder.
Italic	Italic formatting is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	This format is used for an optional value, where only one item can be selected.	`ipconfig [-all|-t]`
{} or {a|b}	This format is used for a required value, where only one item can be selected.	`switch {active|stand}`

Table of Contents

1.What is SMC?

Server Migration Center (SMC) is a server migration platform developed by Alibaba Cloud. SMC allows you to migrate one or more source servers to Alibaba Cloud. Source servers can be servers in self-managed data centers, virtual machines (VMs), third-party cloud servers, or servers of other types.

Benefits

An increasing number of enterprises migrate on-premises servers to the cloud to solve problems such as server deterioration, complex O & M, slow upgrade and scale-out, and high maintenance costs. However, server migration faces multiple challenges, such as complex migration scenarios, long migration periods, business interruptions, and data loss. Alibaba Cloud SMC provides the following benefits to help you easily migrate servers to the cloud:

- Applies to a wide range of migration scenarios.

  SMC allows you to migrate mainstream servers and operating systems. Mainstream servers include physical hosts, VMs, and hosts on other cloud platforms. Mainstream operating systems include Windows 2003 and later, CentOS, Red Hat, Ubuntu, Debian, SUSE, and openSUSE.

- Supports automated server migration.

  SMC supports automated, unattended server migration. You can check the migration progress by using the SMC console or calling API operations.

- Provides automatic server restoration and result verification.

  SMC automatically detects server conditions and restores unhealthy servers before migration. After migration, you can verify migration results in the SMC console.

For more information, see Benefits and Scenarios.

Migration process

SMC consists of the SMC client and the SMC console. The following figure shows how to migrate a server to an Elastic Compute Service (ECS) image.
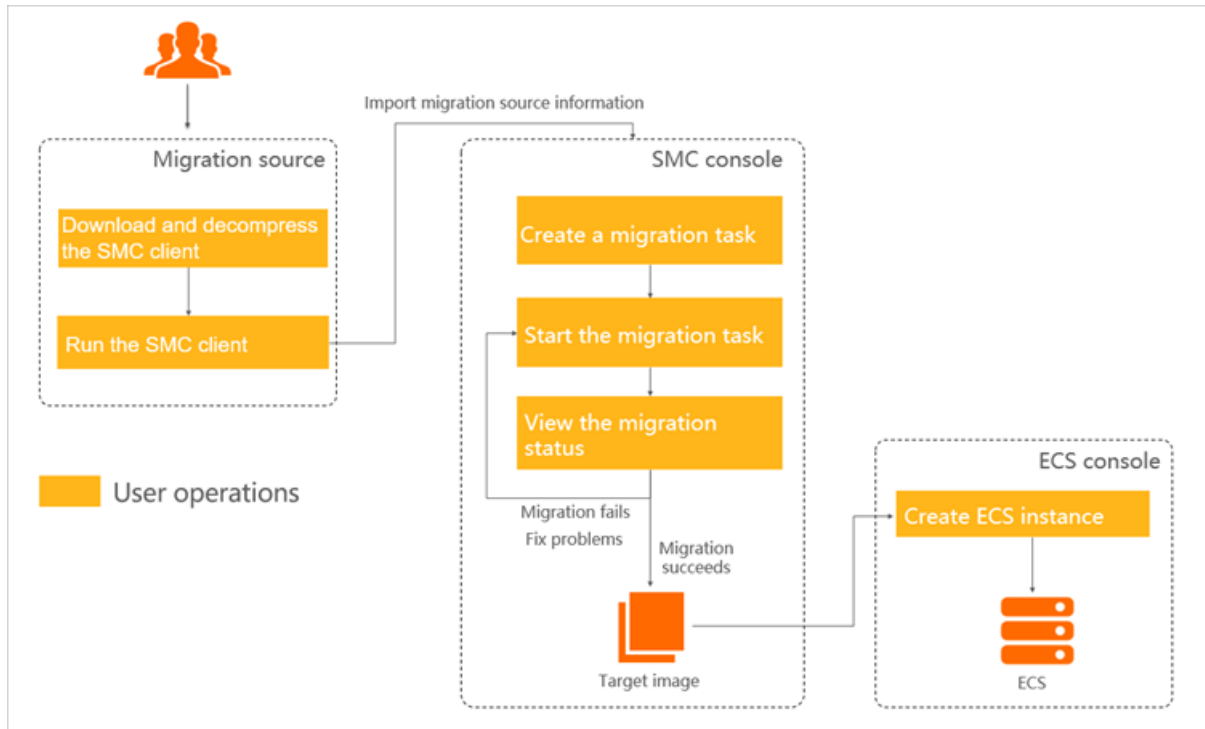
Procedure:

1. Download and run an SMC client on the server. The migration source information is imported to the SMC console while the SMC client is running.

2. In the SMC console, create and start a migration task.

3. View the progress of the migration task in the SMC console. After the migration is complete, an ECS image is generated.

4. Create an ECS instance in the ECS console based on the ECS image.

For more information, see Migration process.

Billing rules

When you use SMC for migration, you are charged only for the ECS resources that you use. For more information, see Billing.

Technical support

For information about how to contact technical support, see Contact us.

2.Benefits

Server Migration Center (SMC) can help you migrate one or more servers to Alibaba Cloud. This topic describes the benefits of SMC.

Migration from diverse platforms and environments

- SMC allows you to migrate source servers that run various versions of Windows and Linux operating systems. For more information, see Limits.

- SMC allows you to migrate data from servers in self-managed data centers, on-premises virtual machines (VMs), or third-party cloud servers to Alibaba Cloud. Supported VMs include VMware, VirtualBox, Xen, KVM, and Hyper-V. Third-party cloud servers include Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), Tencent Cloud, UCloud, China Telecom e-Cloud, and QingCloud.
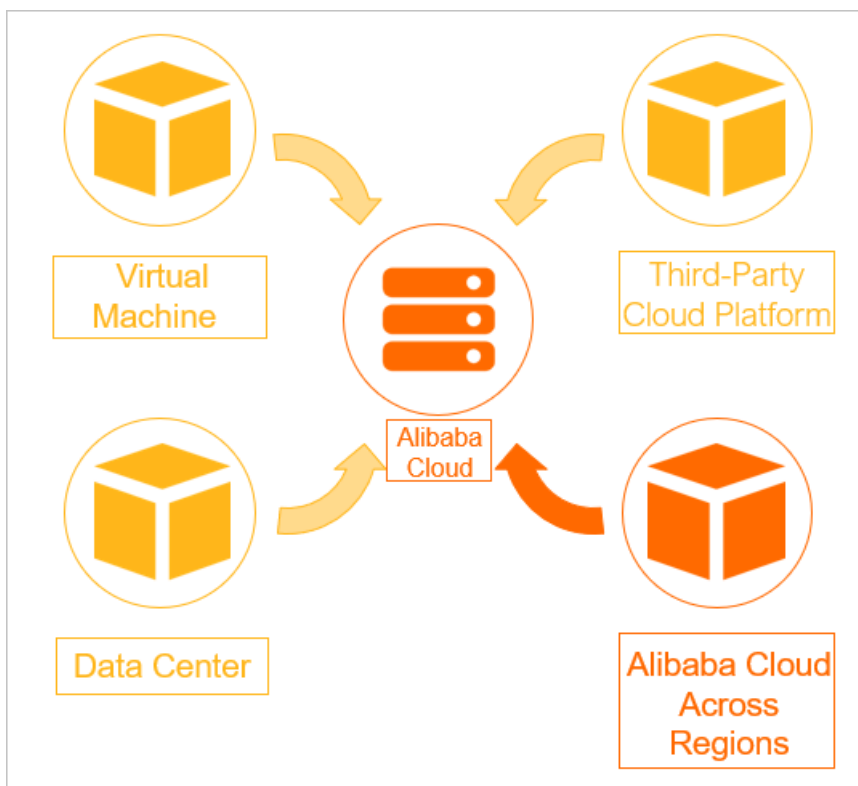
Independence from the underlying environments of source servers

- SMC supports the following types of migration: physical-to-cloud (P2C), virtual-to-cloud (V2C), and cloud-to-cloud (C2C).

- SMC supports multiple types of file systems, such as NTFS, EXT, XFS, and Btrfs.

- SMC supports multiple disk partition types, such as MBR and GPT.

Migration without service interruption

During migration, data on the source server data is completely replicated. You do not need to stop services that run on the source servers.

Simple, lightweight, and flexible configuration

- SMC provides a lightweight client that does not require installation.
- SMC provides multiple migration methods. You can select a method based on your needs.
- After you start a migration task, SMC manages the entire migration progress.

Secure data transmission

- By default, SMS uses 2048-bit RSA keys to encrypt data during data transmission.
- SMS allows you to migrate servers over the private network such as VPN gateways and physical connections provided by Alibaba Cloud Express Connect.

Resumable upload

If data transfer is interrupted, you can restart the client and the migration task to resume migration.

Incremental migration

After the initial full migration, you can start multiple incremental migration tasks to reduce the service downtime and the cutover period.

3.Scenarios

Server Migration Center (SMC) allows you to migrate one or more servers to Alibaba Cloud. This topic describes the scenarios of SMC.

Context

> ⑦ **Note**   SMC completely replicates the data of source servers without modification.

Migrate servers from self-managed data centers to Alibaba Cloud

To solve problems such as server deterioration, complex O & M, slow upgrade and scale-out, and high maintenance costs, you can migrate servers to Alibaba Cloud. Alibaba Cloud provides high availability, high security, and high elasticity.

Migrate on-premises VMs to Alibaba Cloud

Compared with on-premises virtual machines, cloud servers provide higher management flexibility and more resources at lower costs. You can use SMC to migrate virtual machines, such as VMware, VirtualBox, Xen, KVM, and Hyper-V to Alibaba Cloud.

Migrate third-party cloud servers to Alibaba Cloud

If the features, performance, security, and costs of third-party cloud servers cannot meet your business requirements, you can use SMC to migrate third-party cloud servers, such as Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), Tencent Cloud, UCloud, China Telecom e-Cloud, and QingCloud to Alibaba Cloud.

Migrate ECS instances across Alibaba Cloud accounts or regions

If your ECS instances can no longer meet your business requirements even though you upgrade or scale out the instances, you can migrate the instances across Alibaba Cloud accounts, regions, or VPCs. Compared with migration over the Internet, migration over a VPC is more efficient and stable. Therefore, if a virtual private cloud (VPC) is available, we recommend that you perform migration over the VPC.

4.Features

Server Migration Center (SMC) supports automatic data migration from one or more source servers to Alibaba Cloud. This topic describes the features of SMC.

Incremental migration

You can synchronize incremental data from a source server to Alibaba Cloud without interrupting your services. For more information, see Migrate incremental data from a source server.

Batch migration

- You can start multiple migration tasks at a time in the SMC console.
- You can call the API operations of SMC to create and start migration tasks, query the migration progress, and manage multiple migration tasks at a time. For more information, see List of operations by function.

Block replication

SMC can obtain the partition scheme of a source disk and replicate the partition scheme for the destination disk. You can specify the size of each partition of a destination disk. For more information, see Migration task parameters.

Server migration to Container Registry

SMC allows you to migrate Linux servers to Container Registry. You can use SMC to migrate containerized applications to Container Registry at low costs. Containerized applications are distributed applications that are managed in an automatic manner and deployed with high agility and low security risks. Application containerization improves resource usage and reduces computing costs. For more information, see Migrate source servers to Container Registry.

Multi-threading data transmission

The SMC client supports multi-threading data transmission. If a high bandwidth is available, this feature improves the bandwidth usage and transmission efficiency. For more information, see Enable multi-threaded transfer acceleration.

Centralized monitoring of task status

- When you migrate multiple source servers to Alibaba Cloud at a time, SMC allows you to monitor the migration status of each source server.
- You can view the status of each source server or migration task on the Overview page of the SMC console. This allows you to identify and troubleshoot issues that may occur during migration.

5.Terms

This topic describes the terms related to Server Migration Center (SMC) to help you understand and use SMC.

Terms

The following table lists the terms related to SMC.

Term	Description
Server Migration Center	Server Migration Center (SMC) is a migration platform developed by Alibaba Cloud. You can use SMC to migrate one or more servers to Alibaba Cloud. For more information, see What is SMC?.
migration source or source server	Source servers can be servers in self-managed data centers, virtual machines, third-party cloud servers, or servers of other types.
SMC client	The SMC client is a server migration tool developed by Alibaba Cloud. It is lightweight and free of installation.
migration task	After you import the information of a migration source, SMC automatically generates a record for the migration source. You must create and start a migration task for the migration source in the SMC console.
destination instance	When you create a migration task, you can select an ECS instance as the destination instance. After migration, the data in the source server overwrites the data in the destination instance.
intermediate instance	To run a migration task, SMC creates a temporary intermediate instance named `No_Delete_SMC_Transition_Instance` within your Alibaba Cloud account.
ECS image	You can migrate a server to an Elastic Compute Service (ECS) image and create an ECS instance based on the ECS image.
container image	You can migrate a server to a container image and deploy containerized applications based on the container image.

Related services

The following table lists the services that you may use in SMC.

Service name	Description	References
ECS	After you migrate a server to an ECS image, you can create an ECS instance based on the ECS image.	What is ECS?
Virtual Private Cloud (VPC)	Servers are migrated over a VPC.	What is a VPC?
Snapshot	During migration, SMC uses the snapshot service to generate an image from a source server.	Snapshot overview

Service name	Description	References
Image	You can migrate a server to an ECS image and create an ECS instance based on the ECS image.	Image overview
Container image	You can migrate a server to a container image and deploy containerized applications based on the container image.	What is Container Registry?
Resource Access Management (RAM)	You can use RAM to grant permissions.	What is RAM?

6.Limits

This topic describes the limits that apply to Server Migration Center (SMC).

- The following table lists the limits on the number of migration sources and tasks.

Item	Quota	Adjustable
Number of migration sources that can be registered	1,000	Submit a ticket.
Number of migration tasks that can be created	1,000	Submit a ticket.
Number of migration tasks that can be concurrently executed	50	Submit a ticket.

- Each source server can be associated with only one migration task. A migration task is unfinished if it is in the Ready, Running, Stopped, InError, or Expired state.

- When a server is migrated to an image, a virtual private cloud (VPC) is created by default. Each Alibaba Cloud account can have a maximum of 10 VPCs in a region, including your VPCs and the VPCs created for the intermediate instances. To raise the VPC quota, submit a ticket.

> ⑦ **Note**   If you need to migrate multiple servers at a time, we recommend that you select an existing VPC. Otherwise, the migration task may fail to be created due to insufficient VPC quota.

- You must use Grand Unified Bootloader (GRUB) V2.02 or later for migration sources that run the Linux operating system. For more information, see Install GRUB on a Linux server.

> ⑦ **Note**   You must use GRUB V2.02 or later for earlier versions of operating systems such as CentOS 5, Red Hat Enterprise Linux 5, Debian 7, Amazon Linux, and Oracle Linux.

- The SMC client is supported by the following operating systems.

Windows	Linux

Windows	Linux
○ Windows Server 2003 ○ Windows Server 2008 ○ Windows Server 2012 ○ Windows Server 2016 ○ Windows Server 2019	○ CentOS 5, CentOS 6, CentOS 7, and CentOS 8 ○ Red Hat Enterprise Linux 5, Red Hat Enterprise Linux 6, Red Hat Enterprise Linux 7, and Red Hat Enterprise Linux 8 ○ Ubuntu 10, Ubuntu 12, Ubuntu 14, Ubuntu 16, Ubuntu 17, Ubuntu 18, Ubuntu 19, and Ubuntu 20 ○ Debian 7, Debian 8, and Debian 9 ○ openSUSE 13, openSUSE 42, and openSUSE 15 ○ SUSE Linux Enterprise 11, SUSE Linux Enterprise 12, and SUSE Linux Enterprise 15 ○ Gentoo 13.0 ○ Alibaba Cloud Linux ○ Oracle Linux 5, Oracle Linux 6, Oracle Linux 7, and Oracle Linux 8 ○ Amazon Linux 2014 and later