Elastic Cloud Server

Service Overview

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Contents

1 What Is ECS?

An Elastic Cloud Server (ECS) is a basic computing unit that consists of vCPUs, memory, OS, and Elastic Volume Service (EVS) disks.

You can create an ECS by specifying its vCPUs, memory, OS, and login mode. After creating an ECS, you can use it on the cloud like using your local PC or physical server. You can also modify its specifications if necessary. ECS lets your applications run in a reliable, secure, efficient computing environment.

- For details about vCPUs, memory, and specifications of an ECS, see **A Summary List of x86 ECS Specifications** and **A Summary List of Kunpeng ECS Specifications**.
- For details about the operating systems supported by an ECS, see **Image Types**.
- For details about the login authentication modes, see **Logging In to an ECS**.

Why ECS

- Rich specifications: A variety of ECS types with custom specifications are available for different scenarios.
- Various image types: Public, private, and shared images are available for you to choose from.
- A broad range of disk types: High I/O, general-purpose SSD, extreme SSD, general-purpose SSD V2, and ultra-high I/O disks are provided to meet the requirements of different service scenarios.
- Flexible billing modes: You have the flexibility to choose different billing options like yearly/monthly, spot pricing, and pay-per-use.
- Reliable data: High-throughput virtual block storage uses the distributed architecture to ensure high availability and it can be scaled out as needed.
- Security protection: The network is isolated and protected using security group rules. Security services, such as Anti-DDoS, Web Application Firewall (WAF), and Vulnerability Scan Service (VSS) can also be used to further enhance ECS security.
- Auto scaling: Elastic computing resources can be automatically adjusted to suit your needs.
- Efficient O&M: ECSs can be efficiently managed through the management console, remote terminals, or APIs with full rights.

- Cloud monitoring: Cloud Eye samples monitored metrics in real time, generates alarms when detecting problems, and immediately notifies related personnel of the alarms.
- Load balancing: Elastic Load Balance (ELB) evenly distributes incoming traffic across ECSs to prevent overload on an individual ECS. Applications are more tolerant of errors and bursty traffic.

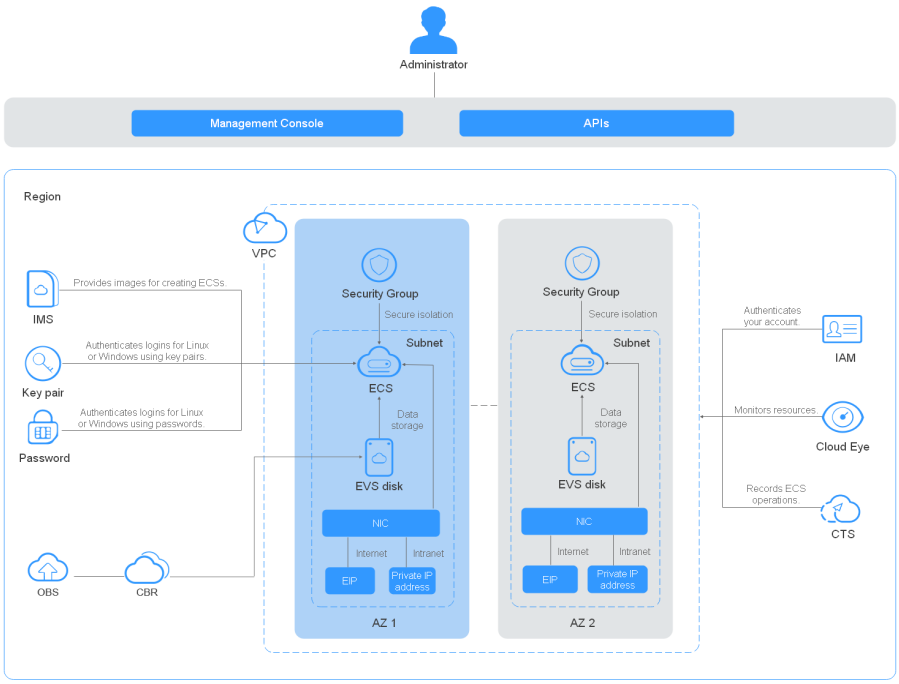
For more details, see **ECS Advantages** and **ECS Application Scenarios**.

System Architecture

ECS works with other products and services to provide computing, storage, and network resources.

- You can deploy ECSs across different availability zones (AZs) that are connected over an intranet. If one AZ becomes unavailable, ECSs in other AZs can continue to provide services.
- Virtual Private Cloud (VPC) helps you build your own dedicated network on the cloud. You can set subnets and security groups within your VPC for further isolation. You can also bind an EIP to your ECSs for Internet access.
- With the Image Management Service (IMS), you can use an image to create ECSs. You can also use an existing ECS to create a private image and use the private image to create the same ECSs for rapid service deployment.
- Elastic Volume Service (EVS) provides storage space. Volume Backup Service (VBS) provides data backup and restoration.
- Cloud Eye lets you keep a close eye on the performance and resource utilization of ECSs, ensuring ECS reliability and availability.
- Cloud Backup and Recovery (CBR) backs up data for EVS disks and ECSs, and uses snapshots and backups to restore the EVS disks and ECSs.

Figure 1-1 System architecture



Access Methods

You can access ECS through the web-based management console or HTTPS-based application programming interfaces (APIs).

- Accessing ECSs through APIs

  Use this method if you intend to integrate ECSs into a third-party system for secondary development. For details, see ***Elastic Cloud Server API Reference***.

- Accessing ECSs through the management console

  Use this method if you are not required to integrate ECSs with a third-party system.

  Log in to the management console with your account and choose **Elastic Cloud Server** on the homepage.

2 ECS Advantages

ECS supports automated scaling of compute resources based on traffic changes and predefined scaling policies. You can customize ECS specifications including vCPUs, memory, and bandwidth to let your applications run in a flexible, efficient environment.

Reliability

- A broad range of EVS disk types

  You can choose from the following disk types to meet your specific demand:

  - High I/O EVS disks: They provide high performance, scalability, and reliability. If your applications require high performance, high read/write speed, and instant data storage, you can store data on high I/O EVS disks.
  - General purpose SSDs: Such disks are cost-effective. You can use them for high-throughput, low-latency applications.
  - Ultra-high I/O EVS disks: They provide high performance and low latency. They are ideal for read/write-intensive applications requiring extremely high performance and low latency.
  - Extreme SSDs: They use RDMA that controls congestion at low latency. They are ideal for applications that require ultra-large bandwidth and ultra-low latency.
  - General-purpose SSD V2 disks: They allow for tailored IOPS and throughput and are suitable for transactional workloads that demand high performance and low latency.

  For more information about EVS disk specifications and performance, see **Elastic Volume Service User Guide**.

- Distributed architecture

  ECS provides scalable, reliable, and high-throughput virtual block storage on a distributed architecture. This ensures that data can be rapidly migrated and restored if any data replica is unavailable, preventing data loss caused by a single hardware fault.

- Backup and restoration

  You can set automatic backup policies to back up in-service ECSs and EVS disks. You can also configure policies on the management console or use an API to back up the data of ECSs and EVS disks at a specified time.

Security

- Multi-dimensional protection

  A number of security services, such as Web Application Firewall (WAF) and Vulnerability Scan Service (VSS) are available.

- Security evaluation

  Cloud security evaluation and security configuration check help you identify security vulnerabilities and threats, reducing or eliminating your loss from viruses or attacks.

- Intelligent process management

  You can customize an allowlist to automatically prohibit the execution of unauthorized programs.

- Vulnerability scan

  Comprehensive scan services are available, including general web vulnerability scan, third-party application vulnerability scan, port detection, and fingerprint identification.

Hardware and Software

- Professional hardware devices

  You can deploy ECSs on professional hardware devices that allow in-depth virtualization optimization, delivering superior virtual server performance.

- Virtual resources accessible anytime, anywhere

  You can obtain scalable, dedicated resources from the virtual resource pool anytime, anywhere, so your applications can run in reliable, secure, flexible, and efficient environments. You can use your ECS like the way you are using your local computer.

Scalability

- Automated scaling of computing resources

  Dynamic scaling: AS automatically increases or decreases the number of ECSs in an AS group based on monitored data.

  Periodic/Scheduled scaling: AS increases or decreases the number of ECSs in an AS group at a regular interval or a specified time based on the predicted load or a pre-set plan.

- Flexible adjustment of ECS specifications

  ECS specifications and bandwidth can be flexibly adjusted based on service requirements.

- Flexible billing options

  You have the flexibility to choose different billing options like yearly/monthly and pay-per-use based on your service characteristics.

3 ECS Application Scenarios

Internet

- No special requirements on CPUs, memory, disk space, or bandwidth
- High security and reliability standards
- Deploying an application on one or only a few ECSs to minimize upfront investment and maintenance costs, such as website development and testing, and small databases

Use general computing ECSs, which provide a balance of computing, memory, and network resources. This ECS type is appropriate for medium-load applications and meets the cloud service needs of both enterprises and individuals.

For details, see **General Computing ECSs** and **General Computing-plus ECSs**.

E-Commerce

- Large amount of memory
- Quick processing of large volumes of data
- Large incoming traffic

Use memory-optimized ECSs, which provide a large memory, ultra-high I/O EVS disks, and the needed bandwidths. This ECS type is suitable for precision marketing, E-Commerce, and mobile apps.

For details, see **Memory-optimized ECSs**.

Graphics Rendering

- High-quality graphics and video
- Large amount of memory and rapid processing of large volumes of data
- Fast network with high I/O
- High GPU performance for graphics rendering and engineering drawing

Use GPU-accelerated ECSs, which adopt NVIDIA Tesla M60 hardware virtualization and provide cost-effective graphics acceleration. These ECSs support DirectX and OpenGL, and provide up to 1 GiB of GPU memory and 4096 x 2160 resolution.

For details, see **GPU-accelerated ECSs**.

Data Analytics

- Capable of processing large volumes of data
- High I/O performance and rapid data switching and processing, such as MapReduce and Hadoop

Use disk-intensive ECSs, which are designed for applications requiring sequential read/write on ultra-large datasets in local storage (such as distributed Hadoop computing) as well as large-scale parallel data processing and log processing. Disk-intensive ECSs use hard disk drives (HDDs) and a default network bandwidth of 10GE, providing high packets per second (PPS) and low network latency. Each disk-intensive ECS supports up to 24 local disks, 48 vCPUs, and 384 GiB of memory.

For details, see **Disk-intensive ECSs**.

High-Performance Computing

High computing performance and throughput, such as scientific computing, genetic engineering, games and animation, biopharmaceuticals, and storage systems

Use high-performance computing ECSs for tasks that require large amounts of resources for parallel computing.

For details, see **High-Performance Computing ECSs**.

For details about application examples, see **Setting Up Websites**.

4 Notes and Constraints on Using ECSs

Notes

- Do not use ECSs as unauthorized servers for any illegal or violation service, such as gambling or cross-border VPN.
- Do not use ECSs for fraudulent transactions, such as click farming on e-commerce websites.
- Do not use ECSs to initiate network attacks, such as DDoS attacks, CC attacks, web attacks, brute force cracking, or to spread viruses and Trojan horses.
- Do not use ECSs for traffic transit.
- Do not use ECSs for web crawling.
- Do not use ECSs to detect other systems like scanning or penetration unless otherwise being authorized.
- Do not deploy any illegal websites or applications on ECSs.
- Do not use ECSs to send spams.

Restricted Operations on ECSs

- Do not uninstall drivers on the ECS hardware.
- Do not install external hardware devices, such as encryption dongles, USB flash drives, external hard disks, or bank USB security keys on ECSs.
- Do not change the MAC address of NICs.
- Do not install virtualization software on ECSs for nested virtualization.
- Do not associate software licenses with the physical server hosting an ECS. Once an ECS is migrated from one physical server to another, the associated licenses may become invalid.
- Do not deploy applications on a single ECS if you require high availability. Set up auto start for your ECSs or deploy applications in cluster or active/standby mode.
- Data on ECSs running core applications needs to be backed up.
- Monitoring needs to be configured for ECSs.
- Do not change the default DNS server address. If you need to configure a public DNS address, configure both a public and a private DNS address on your ECS.

- The system disk can boot from Basic Input Output System (BIOS) or Unified Extensible Firmware Interface (UEFI) according to the boot mode in the image file.
  - You can change the OS to convert the boot mode of the ECS.
  - You can create a UEFI or BIOS private image and use it to create an ECS.

Precautions for Using Windows ECSs

- Do not stop system processes if you are not sure about the consequences. Otherwise, blue screen of death (BSOD) may occur on the ECS, or the ECS may restart.
- Ensure that there is at least 2 GB of idle memory. Otherwise, BSOD, frame freezing, or service failure may occur.
- Do not modify the registry. Otherwise, the system may fail to start. If the modification is mandatory, back up the registry before modifying it.
- Do not modify ECS clock settings. Otherwise, DHCP lease may fail, leading to the loss of IP addresses.
- Do not delete the CloudResetPwdAgent or CloudResetPwdUpdateAgent process. Otherwise, one-click password reset will become unavailable.
- Do not disable virtual memory. Otherwise, system performance may deteriorate, or system exceptions may occur.
- Do not delete the VMTool program. Otherwise, the ECS may be abnormal.

Precautions for Using Linux ECSs

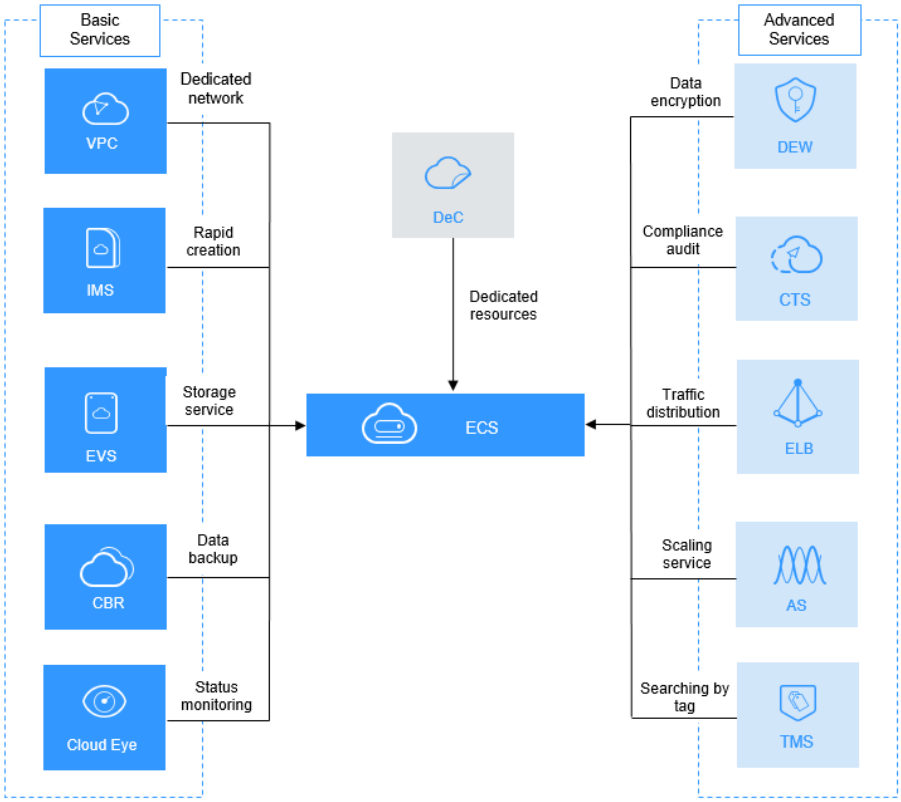
- Do not modify the **/etc/issue** file. Otherwise, the OS distribution will not be identified.
- Do not delete system directories or files. Otherwise, the system may fail to start or run properly.
- Do not change the permissions for or names of system directories. Otherwise, the system may fail to start or run properly.
- Do not upgrade the kernel of the Linux unless necessary.

  When upgrading a Linux kernel, follow the instructions provided in **How Can I Upgrade the Kernel of a Linux ECS?**
- Do not delete the CloudResetPwdAgent or CloudResetPwdUpdateAgent process. Otherwise, one-click password reset will be unavailable.
- Do not change the default **/etc/resolv.conf** of the DNS server. Otherwise, software sources and NTP may be unavailable.
- Do not modify default intranet configurations, such as IP addresses, subnet mask, and gateway address of an ECS. Otherwise, network exceptions may occur.
- Manually specified IP addresses for Linux ECSs are generally static IP addresses. To avoid network exceptions caused by conflicts between NetworkManager and internal network services, do not enable NetworkManager when not required, such as when installing Kubernetes.

5 ECS and Other Services

Figure 5-1 shows the relationships between ECS and other services.

Figure 5-1 Relationships between ECS and other services



ECS-related Services

Table 5-1 ECS-related services

Service	Function	Related Operation
Auto Scaling (AS)	Automatically adjusts ECS resources to keep up with changes in demand based on the configured AS policies. This improves resource utilization and reduces costs.	• **Using an Existing ECS to Create an AS Configuration** • **Using a New Specifications Template to Create an AS Configuration**
Elastic Load Balance (ELB)	Automatically distributes traffic to multiple ECSs. This improves fault tolerance.	**Adding Backend Servers**
Elastic Volume Service (EVS)	Allows you to attach EVS disks to an ECS and expand their capacity.	• **Attaching a Non-Shared Disk** • **Attaching a Shared Disk**
Virtual Private Cloud (VPC)	Allows you to create your own dedicated network on the cloud by customizing security groups, VPNs, IP address ranges, and bandwidths. This simplifies network management. You can also customize the ECS access rules within a security group and between security groups to improve ECS security.	• **Assigning an EIP and Binding It to an ECS** • **Adding a Security Group Rule**
Image Management Service (IMS)	Allows you to create ECSs using images. This improves the efficiency of ECS creation. You can also use an existing ECS to create a private image and export the data of the ECS system disk or data disks.	• **Creating a Data Disk Image Using an ECS Data Disk** • **Creating a Full-ECS Image Using an ECS**
Dedicated Computing Cluster (DCC)	To physically isolate your ECS, apply for a DCC before creating the ECS. After you obtain the DCC and set a region for it, your ECS is automatically allocated to the DCC.	• **Enabling a DeC** • **Applying for DCC Resources**

Service	Function	Related Operation
Cloud Eye	Allows you to check the status of monitored ECS resources. This can be done without requiring additional plug-ins.	• **Basic ECS Metrics** • **ECS Metrics Under OS Monitoring (with Agent Installed)**
Data Encryption Workshop (DEW)	The encryption feature relies on DEW. You can use an encrypted image or EVS disks when creating an ECS. In such a case, you need to use the key provided by DEW to improve data security.	• **EVS Disk Encryption** • **Encrypting Images** • **Creating a Key Pair**
Cloud Trace Service (CTS)	Records ECS-related operations for later query, auditing, and backtracking.	• **Key Operations Supported by CTS**
Cloud Backup and Recovery (CBR)	Backs up EVS disks and ECSs for fault recovery.	**Purchasing a Server Backup Vault**
Tag Management Service (TMS)	Identifies ECSs to help classification and search.	• **Adding Tags** • **Searching for Resources by Tag**

6 Instances

6.1 ECS Overview

An ECS is a basic computing unit that consists of vCPUs, memory, OS, and EVS disks.

After creating an ECS, you can use it like using your local computer or physical server, ensuring secure, reliable, and efficient computing. ECSs support self-service creation, modification, and operation. You can create an ECS by specifying its vCPUs, memory, OS, and login authentication. After the ECS is created, you can modify its specifications as required. This ensures a reliable, secure, efficient computing environment.

The cloud platform provides multiple ECS types for different computing and storage capabilities. One ECS type provides various flavors with different vCPU and memory configurations for you to select.

- For details about ECS types, see **ECS Types**.
- For details about all ECS statuses in a lifecycle, see **ECS Lifecycle**.
- For details about ECS specifications, see **A Summary List of x86 ECS Specifications**.

6.2 ECS Lifecycle

The ECS lifecycle refers to the entire journey an ECS goes through, from creation to deletion (or release).

Table 6-1 ECS statuses

Status	Status Attribute	Description
Creating	Intermediate	The ECS is being created.
Starting	Intermediate	The ECS is being started.

Status	Status Attribute	Description
Running	Stable	The ECS is running properly.
Stopping	Intermediate	The ECS is being stopped.
Stopped	Stable	The ECS has been stopped.
Restarting	Intermediate	The ECS is being restarted.
Resizing	Intermediate	The ECS has received a resizing request and has started to resize.
Verifying resizing	Intermediate	The ECS is verifying the new size.
Deleting	Intermediate	The ECS is being deleted. If the ECS remains in this state for a long time, exceptions may have occurred. In such a case, contact technical support.
Deleted	Intermediate	The ECS has been deleted. An ECS in this state cannot provide services and will be promptly cleared from the system.
Faulty	Stable	An exception has occurred on the ECS. Contact technical support for assistance.
Reinstalling OS	Intermediate	The ECS has received a request to reinstall the OS and has begun the reinstallation.
Reinstalling OS failed	Stable	The ECS received a request to reinstall the OS, but the reinstallation failed. Contact technical support for assistance.
Changing OS	Intermediate	The ECS received a request to change the OS and has begun implementing the changes.
OS change failed	Stable	The ECS has received a request to change the OS, but due to exceptions, the change attempt failed. Contact technical support for assistance.
Forcibly restarting	Intermediate	The ECS is being forcibly restarted.
Rolling back resizing	Intermediate	The ECS is rolling back a resizing operation.

Status	Status Attribute	Description
Frozen	Stable	The ECS has been stopped by the administrator because the order has expired or is overdue. An ECS in this state cannot provide services. The system retains it for a period of time. If it is not renewed after the time expires, the system will automatically delete the ECS.

6.3 ECS Types

The cloud platform provides the following ECS types for different application scenarios:

- x86 architecture
  - **General computing**
  - **General computing-plus**
  - **General computing-basic**
  - **Memory-optimized**
  - **Large-memory**
  - **Disk-intensive**
  - **Ultra-high I/O**
  - **High-performance computing**
  - **GPU-accelerated**
- Kunpeng architecture
  - **Kunpeng general computing-plus**

x86 and Kunpeng Architectures

ECS supports the following architectures:

- x86 architecture

  The x86 architecture uses the complex Instruction Set Computer (CISC). CISC has a large collection of complex instructions that range from simple to very complex and specialized in the assembly language level, which takes a long time to execute the instructions.

- Kunpeng architecture

  The Kunpeng architecture uses the reduced Instruction Set Computer (RISC). RISC a microprocessor architecture with a simple collection and highly customized set of instructions. It is built to minimize the instruction execution time by optimizing and limiting the number of instructions.

  The Kunpeng architecture delivers more balanced performance/power consumption than the x86 architecture.

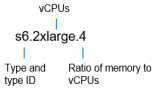
Table 6-2 Comparison between the x86 and Kunpeng architectures

Dimension	x86 Architecture	Kunpeng Architecture
Advantage	Good ecosystem, support for almost all general software	Huawei-developed processors, cost-effective
Scenario	Platform-dependent scenarios using Windows software and x86-compatible commercial software	• Platform-independent scenarios such as e-commerce, big data, and scientific computing • Arm native scenarios such as mobile phone simulation

ECS Flavor Naming Rules

Figure 6-1 shows a flavor name, which consists of the instance generation, instance size, and memory/vCPU ratio.

Figure 6-1 Flavor naming rule



NOTE

Certain flavor names contain additional identifiers. For example, c6h.22xlarge.2.physical contains the additional identifier **physical**, which indicates that this BMS instance shares a resource pool with ECS instances.

- Instance types

  The instance type is named in the following format: CPU architecture + instance family + instance generation + additional capabilities.

  Table 6-3 describes the naming rule for the instance type.

Table 6-3 Naming rule for the instance type

Item	Description	Rule	Example
Processor family	Indicates the CPU architecture.	Represented in a lowercase letter.	• x86: There is no prefix by default. • Kunpeng: The prefix is a lowercase letter k.
Instance family	Indicates the typical scenarios.	Represented in a lowercase letter.	See **Table 6-4**.
Instance generation	Indicates the evolution of the instance family.	Represented in a digit. The digit increases as the hardware and architecture evolves.	None
Additional capabilities	Indicate the enhanced capabilities of the instance when compared with the other instances of the same generation.	Represented in lowercase letters.	See **Table 6-5**.

Table 6-4 Instance families

Application Scenarios	Segmented Scenarios	Instance Family	Description
General-purpose	General Computing-Basic	t	Turbo
	General Computing	s	Standard
	General Computing-plus	c	Compute
High-performance computing	High-Performance Computing	h	High Performance
Big data	Disk-intensive	d	Disk

Application Scenarios	Segmented Scenarios	Instance Family	Description
	Ultra-high I/O (large-capacity local disks)	i	IOPS
	Ultra-high I/O (small-capacity local disks)	ir	IOPS Raid
Memory-intensive	Memory-optimized	m	Memory
	Large-Memory	e	Enhanced Memory
Computing-accelerated	GPU computing-accelerated	p	Parallel
	GPU graphics-accelerated	g	Graphic
	GPU inference-accelerated	pi	Parallel Inference
	FPGA-accelerated	fp	FPGA Performance
	AI inference-accelerated	ai	Ascend Inference

Table 6-5 Additional capabilities

Suffix	Example	Description
ne	c3ne	Network Enhanced
s	c6s	Standard
v	p2v	NVlink
h	c6h	High performance

- Instance sizes

  The instance sizes can be small, medium, large, xlarge, or Nxlarge, as shown in **Table 6-6**.

  For example, 2xlarge in s6.2xlarge.4 indicates that there are 8 vCPUs.

Table 6-6 Mapping between instance size and the number of vCPUs

Instance Size	vCPUs
small	1
medium	1
large	2
xlarge	4
Nxlarge	*N* x 4. A larger value of *N* indicates more vCPUs.

- Memory/vCPU ratio

  It is represented by a digit.

  For example, 4 in s6.2xlarge.4 indicates a memory-to-vCPU ratio of 4, which means that there are 8 vCPUs and the memory size is 32 GiB.
- Additional identifies

  The BMSs that share a resource pool with ECSs are identified by physical.

  For example, **physical** in c6h.22xlarge.2.physical indicates a standard BMS instance that shares a resource pool with ECS instances.

vCPU

ECS supports hyper-threading, which enables two threads to run concurrently on a single CPU core. Each thread is represented as a virtual CPU (vCPU) and a CPU core contains two vCPUs (logical cores).

Hyper-threading is enabled for most ECS flavors by default. If hyper-threading is disabled during the ECS creation or flavor change, the number of vCPUs queried from the ECS is half of the number of vCPUs defined by the ECS flavor.

For example, a 2-core physical CPU contains 4 vCPUs (threads).

Network QoS

Network QoS uses basic technologies to improve the quality of network communication. A network with QoS enabled offers predictable network performance and effectively allocates network bandwidth to use network resources.

To obtain the QoS data of an ECS flavor, including the maximum bandwidth, assured bandwidth, maximum intranet PPS, NIC multi-queues, and maximum NICs, see **A Summary List of x86 ECS Specifications**.

The intranet bandwidth and PPS of an ECS are determined by the ECS flavor.

- Assured intranet bandwidth: indicates the guaranteed bandwidth allocated to an ECS when there is a network bandwidth contention in the entire network.
- Maximum intranet bandwidth: indicates the maximum bandwidth that can be allocated to an ECS when the ECS does not compete for network bandwidth (other ECSs on the host do not have high requirements on network bandwidth).

- Maximum intranet PPS: indicates the maximum ECS capability in sending and receiving packets.

  PPS: packets per second, indicates the number of packets sent per second. It is usually used to measure the network performance.
- NIC multi-queues: allocates NIC interrupt requests to multiple vCPUs for higher PPS performance and bandwidth
- Maximum NICs: indicates the maximum number of NICs that can be attached to an ECS.
- Maximum supplementary NICs: indicates the maximum number of supplementary NICs that can be attached to an ECS.

NOTE

- For instructions about how to test packet transmit and receive, see **How Can I Test Network Performance?**
- For instructions about how to enable NIC multi-queue, see **Enabling NIC Multi-Queue**.
- The maximum bandwidth is the total bandwidth allocated to an ECS. If an ECS has multiple NICs, the sum of the maximum bandwidths allocated to all NICs cannot exceed the maximum bandwidth allocated to the ECS.
- A NIC refers to an elastic network interface. You can create and configure network interfaces and attach them to your ECSs for flexible and highly available network configurations.

  For details, see **Elastic Network Interface**.
- A supplementary NIC is a supplement to NICs. If the number of NICs that can be attached to your ECSs cannot meet your requirements, you can use supplementary NICs.

  For details, see **Supplementary Network Interface**.

Dedicated and Shared ECSs

Table 6-7 Differences between dedicated and shared ECSs

Dimension	Dedicated ECS	Shared ECS
CPU Allocation	CPUs are exclusively used and there is no CPU contention.	CPUs are shared and CPU contention may occur.
Feature	• High performance • Dedicated and stable computing, storage, and network resources • High costs	• Unstable performance when loads are high • Shared computing, storage, and network resources • Low costs
Application Scenario	For enterprises that have high requirements on service stability	For small- and medium-sized websites or individuals that have requirements on cost-effectiveness
ECS Specifications	Specifications except general computing and general computing-basic	x86 computing: • **General computing** • **General computing-basic**

7 x86 ECS Specifications and Types

7.1 A Summary List of x86 ECS Specifications

This section describes the specifications that are available now. For details about specifications that are discontinued, see **Discontinued ECS Specifications**.

For details about how to purchase an x86 ECS, see **Purchasing an ECS**.

For details about specifications, see **ECS Types**.

General Computing ECSs

For more details, see **General Computing ECSs**.

Table 7-1 General computing ECS features

Type	Compute	Disk Type	Network
S7	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 8 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.8 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • An ECS with higher specifications has better network performance. • Maximum packets per second (PPS): 500,000 • Maximum intranet bandwidth: 3 Gbit/s

Type	Compute	Disk Type	Network
S7n	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 8 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 500,000 • Maximum intranet bandwidth: 3 Gbit/s
S6	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 8 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 500,000 • Maximum intranet bandwidth: 3 Gbit/s
Sn3	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.2 GHz/3.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 1,000,000 • Maximum intranet bandwidth: 6 Gbit/s

Type	Compute	Disk Type	Network
S3	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.2 GHz/3.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 300,000 • Maximum intranet bandwidth: 4 Gbit/s
S2	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.4 GHz/3.3 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• An ECS with higher specifications has better network performance. • Maximum PPS: 300,000 • Maximum intranet bandwidth: 4 Gbit/s

Table 7-2 S7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
s7.small.1	1	1	0.8/0.1	10	1	2	4	KVM
s7.medium.2	1	2	0.8/0.1	10	1	2	4	KVM
s7.large.2	2	4	1.5/0.2	15	1	2	8	KVM
s7.xlarge.2	4	8	2/0.35	25	1	2	16	KVM
s7.2xlarge.2	8	16	3/0.75	50	2	2	32	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
s7.medium.4	1	4	0.8/0.1	10	1	2	4	KVM
s7.large.4	2	8	1.5/0.2	15	1	2	8	KVM
s7.xlarge.4	4	16	2/0.35	25	1	2	16	KVM
s7.2xlarge.4	8	32	3/0.75	50	2	2	32	KVM

Table 7-3 S7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
s7n.small.1	1	1	0.8/0.1	10	1	2	4	KVM
s7n.medium.2	1	2	0.8/0.1	10	1	2	4	KVM
s7n.large.2	2	4	1.5/0.2	15	1	2	8	KVM
s7n.xlarge.2	4	8	2/0.35	25	1	2	16	KVM
s7n.2xlarge.2	8	16	3/0.75	50	2	2	32	KVM
s7n.medium.4	1	4	0.8/0.1	10	1	2	4	KVM
s7n.large.4	2	8	1.5/0.2	15	1	2	8	KVM
s7n.xlarge.4	4	16	2/0.35	25	1	2	16	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
s7n.2xlarge.4	8	32	3/0.75	50	2	2	32	KVM

Table 7-4 S6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
s6.small.1	1	1	0.8/0.1	10	1	2	KVM
s6.medium.2	1	2	0.8/0.1	10	1	2	KVM
s6.large.2	2	4	1.5/0.2	15	1	2	KVM
s6.xlarge.2	4	8	2/0.35	25	1	2	KVM
s6.2xlarge.2	8	16	3/0.75	50	2	2	KVM
s6.medium.4	1	4	0.8/0.1	10	1	2	KVM
s6.large.4	2	8	1.5/0.2	15	1	2	KVM
s6.xlarge.4	4	16	2/0.35	25	1	2	KVM
s6.2xlarge.4	8	32	3/0.75	50	2	2	KVM

Table 7-5 Sn3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
sn3.small.1	1	1	0.8/0.2	10	1	1	KVM
sn3.medium.2	1	2	0.8/0.2	10	1	1	KVM
sn3.large.2	2	4	1.5/0.35	15	1	2	KVM
sn3.xlarge.2	4	8	2/0.7	25	1	2	KVM
sn3.2xlarge.2	8	16	3/1.3	50	2	2	KVM
sn3.4xlarge.2	16	32	6/2.5	100	4	2	KVM
sn3.medium.4	1	4	0.8/0.2	10	1	1	KVM
sn3.large.4	2	8	1.5/0.35	15	1	2	KVM
sn3.xlarge.4	4	16	2/0.7	25	1	2	KVM
sn3.2xlarge.4	8	32	3/1.3	50	2	2	KVM
sn3.4xlarge.4	16	64	6/2.5	100	4	2	KVM

Table 7-6 S3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
s3.small.1	1	1	0.5/0.1	5	1	KVM
s3.medium.2	1	2	0.5/0.1	5	1	KVM
s3.large.2	2	4	0.8/0.2	10	1	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
s3.xlarge.2	4	8	1.5/0.4	15	1	KVM
s3.2xlarge.2	8	16	3/0.8	20	2	KVM
s3.4xlarge.2	16	32	4/1.5	30	4	KVM
s3.medium.4	1	4	0.5/0.1	5	1	KVM
s3.large.4	2	8	0.8/0.2	10	1	KVM
s3.xlarge.4	4	16	1.5/0.4	15	1	KVM
s3.2xlarge.4	8	32	3/0.8	20	2	KVM
s3.4xlarge.4	16	64	4/1.5	30	4	KVM

Table 7-7 S2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
s2.small.1	1	1	0.5/0.1	5	1	KVM
s2.medium.2	1	2	0.5/0.1	5	1	KVM
s2.large.2	2	4	0.8/0.2	10	1	KVM
s2.xlarge.2	4	8	1.5/0.4	15	1	KVM
s2.2xlarge.2	8	16	3/0.8	20	2	KVM
s2.4xlarge.2	16	32	4/1.5	30	4	KVM
s2.8xlarge.2	32	64	6/3	50	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
s2.medium.4	1	4	0.5/0.1	5	1	KVM
s2.large.4	2	8	0.8/0.2	10	1	KVM
s2.xlarge.4	4	16	1.5/0.4	15	1	KVM
s2.2xlarge.4	8	32	3/0.8	20	2	KVM
s2.4xlarge.4	16	64	4/1.5	30	4	KVM
s2.8xlarge.4	32	128	6/3	50	8	KVM

General Computing-plus ECSs

For more details, see **General Computing-plus ECSs**.

Table 7-8 General computing ECS features

Flavor	Compute	Disk Type	Network
C7	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 128 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz and 2.8 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 12,000,000 • Maximum intranet bandwidth: 42 Gbit/s

Flavor	Compute	Disk Type	Network
General computing-plus aC7	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 232 • Basic/Turbo frequency: 2.45GHz/3.5GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 20,000,000 • Maximum intranet bandwidth: 100 Gbit/s
General computing-plus C7n	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,500,000 • Maximum intranet bandwidth: 40 Gbit/s
General computing-plus C7t	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 128 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.8 GHz/3.5 GHz	• General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2 • Extreme SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 30 million PPS • Maximum intranet bandwidth: 90 Gbit/s

Flavor	Compute	Disk Type	Network
General computing-plus C7h	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 128 or 152 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.8 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 30 million PPS • Maximum intranet bandwidth: 100 Gbit/s
C6s	• vCPU to memory ratio: 1:2 • Number of vCPUs: 2 to 64 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,500,000 • Maximum intranet bandwidth: 30 Gbit/s
C6h	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 88 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 44 Gbit/s • Support for RDMA

Flavor	Compute	Disk Type	Network
C6	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 64 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
C3ne	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
C3	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 16 Gbit/s

Table 7-9 C7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7.large.2	2	4	4/0.8	40	2	2	16	Qing Tian
c7.xlarge.2	4	8	8/1.6	80	2	3	32	
c7.2xlarge.2	8	16	15/3	150	4	4	64	
c7.3xlarge.2	12	24	17/5	200	4	6	96	
c7.4xlarge.2	16	32	20/6	280	8	8	128	
c7.6xlarge.2	24	48	25/9	400	8	8	192	
c7.8xlarge.2	32	64	30/12	550	16	8	256	
c7.12xlarge.2	48	96	35/18	750	16	8	256	
c7.16xlarge.2	64	128	36/24	1,000	28	8	256	
c7.24xlarge.2	96	192	40/36	1,100	32	8	256	
c7.32xlarge.2	128	256	42/40	1,200	32	8	256	
c7.large.4	2	8	4/0.8	40	2	2	16	
c7.xlarge.4	4	16	8/1.6	80	2	3	32	
c7.2xlarge.4	8	32	15/3	150	4	4	64	
c7.3xlarge.4	12	48	17/5	200	4	6	96	
c7.4xlarge.4	16	64	20/6	280	8	8	128	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7.6xlarge.4	24	96	25/9	400	8	8	192	
c7.8xlarge.4	32	128	30/12	550	16	8	256	
c7.12xlarge.4	48	192	35/18	750	16	8	256	
c7.16xlarge.4	64	256	36/24	1,000	28	8	256	
c7.24xlarge.4	96	384	40/36	1,100	32	8	256	
c7.32xlarge.4	128	512	42/40	1,200	32	8	256	

Table 7-10 aC7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
ac7.large.2	2	4	2/1	40	2	2	16	KVM
ac7.xlarge.2	4	8	3/1.5	60	2	3	32	
ac7.2xlarge.2	8	16	4/2.5	100	4	4	64	
ac7.3xlarge.2	12	24	6/4	150	4	6	96	
ac7.4xlarge.2	16	32	8/5	200	8	8	128	
ac7.6xlarge.2	24	48	12/6	250	8	8	192	
ac7.8xlarge.2	32	64	15/8	300	16	8	256	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
ac7.12xlarge.2	48	96	22/12	400	16	8	256	
ac7.16xlarge.2	64	128	28/16	550	24	12	256	
ac7.24xlarge.2	96	192	40/25	800	24	12	256	
ac7.29xlarge.2	116	216	50/30	950	32	16	256	
ac7.32xlarge.2	128	256	55/35	1,000	32	16	256	
ac7.48xlarge.2	192	384	100/80	1,600	32	16	256	
ac7.58xlarge.2	232	432	120/100	2,000	32	16	256	
ac7.large.4	2	8	2/1	40	2	2	16	
ac7.xlarge.4	4	16	3/1.5	60	2	3	32	
ac7.2xlarge.4	8	32	4/2.5	100	4	4	64	
ac7.3xlarge.4	12	48	6/4	150	4	6	96	
ac7.4xlarge.4	16	64	8/5	200	8	8	128	
ac7.6xlarge.4	24	96	12/6	250	8	8	192	
ac7.8xlarge.4	32	128	15/8	300	16	8	256	
ac7.12xlarge.4	48	192	22/12	400	16	8	256	
ac7.16xlarge.4	64	256	28/16	550	24	12	256	
ac7.24xlarge.4	96	384	40/25	800	24	12	256	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
ac7.29xlarge.4	116	464	50/30	950	32	16	256	
ac7.32xlarge.4	128	512	55/35	1,000	32	16	256	
ac7.48xlarge.4	192	768	100/80	1,600	32	16	256	
ac7.58xlarge.4	232	928	120/100	2,000	32	16	256	

Table 7-11 C7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7n.large.2	2	4	4/0.8	40	2	2	16	KVM
c7n.xlarge.2	4	8	8/1.6	80	2	3	32	KVM
c7n.2xlarge.2	8	16	15/3	150	4	4	64	KVM
c7n.3xlarge.2	12	24	17/5	200	4	6	96	KVM
c7n.4xlarge.2	16	32	20/6	280	8	8	128	KVM
c7n.6xlarge.2	24	48	25/9	400	8	8	192	KVM
c7n.8xlarge.2	32	64	30/12	550	16	8	256	KVM
c7n.12xlarge.2	48	96	35/18	750	16	8	256	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7n.16xlarge.2	64	128	36/24	800	28	8	256	KVM
c7n.24xlarge.2	96	192	40/36	850	32	8	256	KVM
c7n.large.4	2	8	4/0.8	40	2	2	16	KVM
c7n.xlarge.4	4	16	8/1.6	80	2	3	32	KVM
c7n.2xlarge.4	8	32	15/3	150	4	4	64	KVM
c7n.3xlarge.4	12	48	17/5	200	4	6	96	KVM
c7n.4xlarge.4	16	64	20/6	280	8	8	128	KVM
c7n.6xlarge.4	24	96	25/9	400	8	8	192	KVM
c7n.8xlarge.4	32	128	30/12	550	16	8	256	KVM
c7n.12xlarge.4	48	192	35/18	750	16	8	256	KVM
c7n.16xlarge.4	64	256	36/24	800	28	8	256	KVM
c7n.24xlarge.4	96	384	40/36	850	32	8	256	KVM

Table 7-12 C7t ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7t.large.2	2	4	10/1.28	80	2	2	16	QingTian
c7t.xlarge.2	4	8	16/2.56	150	2	3	32	
c7t.2xlarge.2	8	16	20/4	200	4	4	64	
c7t.3xlarge.2	12	24	34/6.4	300	4	6	96	
c7t.4xlarge.2	16	32	40/8	400	8	8	128	
c7t.6xlarge.2	24	48	50/14.4	600	8	8	192	
c7t.8xlarge.2	32	64	60/16	800	16	8	256	
c7t.12xlarge.2	48	96	70/28.8	1200	16	8	256	
c7t.16xlarge.2	64	128	72/32	1500	28	8	256	
c7t.24xlarge.2	96	192	80/40	2400	32	8	256	
c7t.32xlarge.2	128	256	90/48	3000	32	8	256	
c7t.large.4	2	8	10/1.28	80	2	2	16	
c7t.xlarge.4	4	16	16/2.56	150	2	3	32	
c7t.2xlarge.4	8	32	20/4	200	4	4	64	
c7t.3xlarge.4	12	48	34/6.4	300	4	6	96	
c7t.4xlarge.4	16	64	40/8	400	8	8	128	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7t.6xlarge.4	24	96	50/14.4	600	8	8	192	
c7t.8xlarge.4	32	128	60/16	800	16	8	256	
c7t.12xlarge.4	48	192	70/28.8	1200	16	8	256	
c7t.16xlarge.4	64	256	72/32	1500	28	8	256	
c7t.24xlarge.4	96	384	80/40	2400	32	8	256	

Table 7-13 C7h ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c7h.32xlarge.2.physical	128	256	44/40	1,000	16	33	BMS
c7h.38xlarge.2.physical	152	512	100/90	3000	32	32	BMS
c7h.32xlarge.4.physical	128	512	44/40	1,000	16	33	BMS
c7h.38xlarge.4.physical	152	768	100/90	3000	32	32	BMS

Table 7-14 C6s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6s.large.2	2	4	1/1	30	2	2	KVM
c6s.xlarge.2	4	8	2/2	60	2	3	KVM
c6s.2xlarge.2	8	16	4/4	120	4	4	KVM
c6s.3xlarge.2	12	24	5.5/5.5	180	4	6	KVM
c6s.4xlarge.2	16	32	7.5/7.5	240	8	8	KVM
c6s.6xlarge.2	24	48	11/11	350	8	8	KVM
c6s.8xlarge.2	32	64	15/15	450	16	8	KVM
c6s.12xlarge.2	48	96	22/22	650	16	8	KVM
c6s.16xlarge.2	64	128	30/30	850	32	8	KVM
c6s.large.4	2	8	1/1	30	2	2	KVM
c6s.xlarge.4	4	16	2/2	60	2	3	KVM
c6s.2xlarge.4	8	32	4/4	120	4	4	KVM
c6s.3xlarge.4	12	48	5.5/5.5	180	4	6	KVM
c6s.4xlarge.4	16	64	7.5/7.5	240	8	8	KVM
c6s.6xlarge.4	24	96	11/11	350	8	8	KVM
c6s.8xlarge.4	32	128	15/15	450	16	8	KVM
c6s.12xlarge.4	48	192	22/22	650	16	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6s.16xlarge.4	64	256	30/30	850	32	8	KVM

Table 7-15 C6h ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6h.22xlarge.2.physical	88	192	44/40	1,000	16	33	BMS
c6h.22xlarge.4.physical	88	384	44/40	1,000	16	33	BMS

Table 7-16 C6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6.large.2	2	4	4/1.2	40	2	2	KVM
c6.xlarge.2	4	8	8/2.4	80	2	3	KVM
c6.2xlarge.2	8	16	15/4.5	150	4	4	KVM
c6.3xlarge.2	12	24	17/7	200	4	6	KVM
c6.4xlarge.2	16	32	20/9	280	8	8	KVM
c6.6xlarge.2	24	48	25/14	400	8	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6.8xlarge.2	32	64	30/18	550	16	8	KVM
c6.12xlarge.2	48	96	35/27	750	16	8	KVM
c6.16xlarge.2	64	128	40/36	1,000	32	8	KVM
c6.22xlarge.2	88	176	44/40	1,200	32	8	KVM
c6.22xlarge.2.physical	88	192	44/40	1,000	16	33	BMS
c6.large.4	2	8	4/1.2	40	2	2	KVM
c6.xlarge.4	4	16	8/2.4	80	2	3	KVM
c6.2xlarge.4	8	32	15/4.5	150	4	4	KVM
c6.3xlarge.4	12	48	17/7	200	4	6	KVM
c6.4xlarge.4	16	64	20/9	280	8	8	KVM
c6.6xlarge.4	24	96	25/14	400	8	8	KVM
c6.8xlarge.4	32	128	30/18	550	16	8	KVM
c6.12xlarge.4	48	192	35/27	750	16	8	KVM
c6.16xlarge.4	64	256	40/36	1,000	32	8	KVM
c6.22xlarge.4	88	352	44/40	1,200	28	8	KVM
c6.22xlarge.4.physical	88	384	44/40	1,000	16	33	BMS

Table 7-17 C3ne ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c3ne.large.2	2	4	4/1.3	40	2	2	KVM
c3ne.xlarge.2	4	8	8/2.5	80	2	3	KVM
c3ne.2xlarge.2	8	16	15/5	150	4	4	KVM
c3ne.4xlarge.2	16	32	20/10	280	8	8	KVM
c3ne.8xlarge.2	32	64	30/20	550	16	8	KVM
c3ne.15xlarge.2	60	128	40/40	1,000	32	8	KVM
c3ne.large.4	2	8	4/1.3	40	2	2	KVM
c3ne.xlarge.4	4	16	8/2.5	80	2	3	KVM
c3ne.2xlarge.4	8	32	15/5	150	4	4	KVM
c3ne.4xlarge.4	16	64	20/10	280	8	8	KVM
c3ne.8xlarge.4	32	128	30/20	550	16	8	KVM
c3ne.15xlarge.4	60	256	40/40	1,000	32	8	KVM

Table 7-18 C3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
c3.large.2	2	4	1.5/0.6	30	2	KVM
c3.xlarge.2	4	8	3/1	50	2	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
c3.2xlarge.2	8	16	5/2	90	4	KVM
c3.3xlarge.2	12	24	7/3	110	4	KVM
c3.4xlarge.2	16	32	10/4	130	4	KVM
c3.6xlarge.2	24	48	12/6	200	8	KVM
c3.8xlarge.2	32	64	15/8	260	8	KVM
c3.15xlarge.2	60	128	16/16	500	16	KVM
c3.large.4	2	8	1.5/0.6	30	2	KVM
c3.xlarge.4	4	16	3/1	50	2	KVM
c3.2xlarge.4	8	32	5/2	90	4	KVM
c3.3xlarge.4	12	48	7/3	110	4	KVM
c3.4xlarge.4	16	64	10/4	130	4	KVM
c3.6xlarge.4	24	96	12/6	200	8	KVM
c3.8xlarge.4	32	128	15/8	260	8	KVM
c3.15xlarge.4	60	256	16/16	500	16	KVM

General Computing-Basic ECSs

For more details, see **General Computing-Basic ECSs**.

Table 7-19 General computing ECS features

Type	Compute	Disk Type	Network
T6	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.2 GHz/3.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum packets per second (PPS): 600,000 • Maximum intranet bandwidth: 3 Gbit/s

Table 7-20 T6 ECS specifications

Flavor	vCPUs	Memory (GiB)	CPU Baseline (%)	Average CPU Baseline (%)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NICs	Virtualization
t6.small.1	1	1	10	10	0.3/0.05	6	1	KVM
t6.large.1	2	2	40	20	0.5/0.1	10	1	KVM
t6.xlarge.1	4	4	80	20	1/0.2	20	2	KVM
t6.2xlarge.1	8	8	120	15	2/0.4	40	2	KVM
t6.4xlarge.1	16	16	240	15	3/0.8	60	2	KVM
t6.medium.2	1	2	10	10	0.3/0.05	6	1	KVM
t6.large.2	2	4	40	20	0.5/0.1	10	1	KVM

Flavor	vCPUs	Memory (GiB)	CPU Baseline (%)	Average CPU Baseline (%)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NICs	Virtualization
t6.xlarge.2	4	8	80	20	1/0.2	20	2	KVM
t6.2xlarge.2	8	16	120	15	2/0.4	40	2	KVM
t6.4xlarge.2	16	32	240	15	3/0.8	60	2	KVM
t6.large.4	2	8	40	20	0.5/0.1	10	1	KVM
t6.xlarge.4	4	16	80	20	1/0.2	20	2	KVM
t6.2xlarge.4	8	32	120	15	2/0.4	40	2	KVM

Memory-optimized ECSs

For more details, see **Memory-optimized ECSs**.

Table 7-21 Memory-optimized ECS features

Type	Compute	Disk Type	Network
M7	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 128 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 12,000,000 • Maximum intranet bandwidth: 42 Gbit/s
aM7	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 232 • Basic/Turbo frequency: 2.45GHz/3.5GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 20,000,000 • Maximum intranet bandwidth: 100 Gbit/s

Type	Compute	Disk Type	Network
M7n	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,500,000 • Maximum intranet bandwidth: 40 Gbit/s
M6	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 64 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
M6nl	• vCPU to memory ratio: 1:8 • Number of vCPUs: 4 to 8 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 1,200,000 • Maximum intranet bandwidth: 15 Gbit/s
M3ne	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
M3	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 17 Gbit/s
M2	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 32 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.4 GHz/3.3 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 600,000 • Maximum intranet bandwidth: 13 Gbit/s

Table 7-22 M7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7.large.8	2	16	4/0.8	40	2	2	QingTian
m7.xlarge.8	4	32	8/1.6	80	2	3	
m7.2xlarge.8	8	64	15/3	150	4	4	
m7.3xlarge.8	12	96	17/5	200	4	6	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7.4xlarge.8	16	128	20/6	280	8	8	
m7.6xlarge.8	24	192	25/9	400	8	8	
m7.8xlarge.8	32	256	30/12	550	16	8	
m7.12xlarge.8	48	384	35/18	750	16	8	
m7.16xlarge.8	64	512	36/24	1,000	28	8	
m7.24xlarge.8	96	768	40/36	1,100	32	8	
m7.32xlarge.8	128	1024	42/40	1,200	32	8	

Table 7-23 aM7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
am7.large.8	2	16	2/1	40	2	2	KVM
am7.xlarge.8	4	32	3/1.5	60	2	3	
am7.2xlarge.8	8	64	4/2.5	100	4	4	
am7.3xlarge.8	12	96	6/4	150	4	6	
am7.4xlarge.8	16	128	8/5	200	8	8	
am7.6xlarge.8	24	192	12/6	250	8	8	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
am7.8xlarge.8	32	256	15/8	300	16	8	
am7.12xlarge.8	48	384	22/12	400	16	8	
am7.16xlarge.8	64	512	28/16	550	24	12	
am7.24xlarge.8	96	768	40/25	800	24	12	
am7.29xlarge.8	116	934	50/30	950	32	16	
am7.32xlarge.8	128	1024	55/35	1,000	32	16	
am7.48xlarge.8	192	1536	100/80	1,600	32	16	
am7.58xlarge.8	232	1868	120/100	2,000	32	16	

Table 7-24 M7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7n.large.8	2	16	4/0.8	40	2	2	KVM
m7n.xlarge.8	4	32	8/1.6	80	2	3	KVM
m7n.2xlarge.8	8	64	15/3	150	4	4	KVM
m7n.3xlarge.8	12	96	17/5	200	4	6	KVM
m7n.4xlarge.8	16	128	20/6	280	8	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7n.6xlarge.8	24	192	25/9	400	8	8	KVM
m7n.8xlarge.8	32	256	30/12	550	16	8	KVM
m7n.12xlarge.8	48	384	35/18	750	16	8	KVM
m7n.16xlarge.8	64	512	36/24	800	28	8	KVM
m7n.24xlarge.8	96	768	40/36	850	32	8	KVM

Table 7-25 M6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m6.large.8	2	16	4/1.2	40	2	2	KVM
m6.xlarge.8	4	32	8/2.4	80	2	3	KVM
m6.2xlarge.8	8	64	15/4.5	150	4	4	KVM
m6.3xlarge.8	12	96	17/7	200	4	6	KVM
m6.4xlarge.8	16	128	20/9	280	8	8	KVM
m6.6xlarge.8	24	192	25/14	400	8	8	KVM
m6.8xlarge.8	32	256	30/18	550	16	8	KVM
m6.12xlarge.8	48	384	35/27	750	16	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m6.16xlarge.8	64	512	40/36	1,000	32	8	KVM
m6.22xlarge.8.physical	88	768	40/40	1,000	16	33	BMS

Table 7-26 M6nl ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
m6nl.xlarge.8	4	32	8/2	64	2	KVM
m6nl.2xlarge.8	8	64	15/4	120	4	KVM

Table 7-27 M3ne ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m3ne.large.8	2	16	4/1.3	40	2	2	KVM
m3ne.xlarge.8	4	32	8/2.5	80	2	3	KVM
m3ne.2xlarge.8	8	64	15/5	150	4	4	KVM
m3ne.3xlarge.8	12	96	17/8	200	4	6	KVM
m3ne.4xlarge.8	16	128	20/10	280	8	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m3ne.6xlarge.8	24	192	25/16	400	8	8	KVM
m3ne.8xlarge.8	32	256	30/20	550	16	8	KVM
m3ne.15xlarge.8	60	512	40/40	1,000	32	8	KVM

Table 7-28 M3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
m3.large.8	2	16	1.5/0.6	30	2	KVM
m3.xlarge.8	4	32	3/1.1	50	2	KVM
m3.2xlarge.8	8	64	5/2	90	4	KVM
m3.3xlarge.8	12	96	8/3.5	110	4	KVM
m3.4xlarge.8	16	128	10/4.5	130	4	KVM
m3.6xlarge.8	24	192	12/6.5	200	8	KVM
m3.8xlarge.8	32	256	15/9	260	8	KVM
m3.15xlarge.8	60	512	17/17	500	16	KVM

Table 7-29 M2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
m2.large.8	2	16	1.5/0.5	10	1	KVM
m2.xlarge.8	4	32	3/1	15	1	KVM
m2.2xlarge.8	8	64	5/2	30	2	KVM
m2.4xlarge.8	16	128	8/4	40	4	KVM
m2.8xlarge.8	32	256	13/8	60	8	KVM

Large-Memory ECSs

For more details, see **Large-Memory ECSs**.

Table 7-30 Large-memory ECS features

Type	Compute	Disk Type	Network
E7	• vCPU to memory ratio: 1:20or 1:21 • Number of vCPUs: 48 to 384 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency (vCPU to memory ratio: 1:20): 2.6 GHz/3.5 GHz • Basic/Turbo frequency (vCPU to memory ratio: 1:21): 2.1 GHz/3.8 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 30 million PPS • Maximum intranet bandwidth: 100 Gbit/s

Type	Compute	Disk Type	Network
E6	• vCPU to memory ratio: 1:28 • Number of vCPUs: 104 to 208 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.7 GHz/4.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
E3	• vCPU to memory ratio: 1:12, 1:14, or 1:20 • Number of vCPUs: 28 to 208 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency (vCPU to memory ratio: 1:12): 3.0 GHz/3.4 GHz • Basic/Turbo frequency (vCPU to memory ratio: 1:14 or 1:20): 2.1 GHz/3.8 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Table 7-31 E7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
e7.12xlarge.20	48	960	30/20	550	16	8	1024	KVM
e7.24xlarge.20	96	1920	44/40	1000	32	8	2048	KVM
e7.48xlarge.21	192	4032	50/40	1500	16	8	1024	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
e7.96xlarge.21	384	8064	100/90	3000	32	8	2048	KVM

Table 7-32 E6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
e6.26xlarge.28	104	2948	30/20	550	16	8	KVM
e6.52xlarge.28	208	5896	40/40	1,000	32	8	KVM

Table 7-33 E3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
e3.7xlarge.12	28	348	25/12	280	8	8	KVM
e3.14xlarge.12	56	696	25/25	550	16	8	KVM
e3.26xlarge.14	104	1466	30/20	550	16	8	KVM
e3.52xlarge.14	208	2932	40/40	1,000	32	8	KVM
e3.52xlarge.20	208	4096	40/40	1,000	32	8	KVM

Disk-intensive ECSs

For more details, see **Disk-intensive ECSs**.

Table 7-34 Disk-intensive ECS features

Type	Compute	Disk Type	Network
D7	• vCPU to memory ratio: 1:4 • Number of vCPUs: 4 to 72 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 9,000,000 Maximum intranet bandwidth: 40 Gbit/s
D6	• vCPU to memory ratio: 1:4 • Number of vCPUs: 4 to 72 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 9,000,000 • Maximum intranet bandwidth: 44 Gbit/s

Type	Compute	Disk Type	Network
D3	• vCPU to memory ratio: 1:8 or 1:10 • Number of vCPUs: 4 to 56 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 40 Gbit/s
D2	• vCPU to memory ratio: 1:8 • Number of vCPUs: 4 to 48 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 900,000 • Maximum intranet bandwidth: 13 Gbit/s

Table 7-35 D7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
d7.xlarge.4	4	16	5/1.7	60	2	3	32	2 × 3,600	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
d7.2xlarge.4	8	32	10/3.5	120	4	4	64	4 × 3,600	KVM
d7.4xlarge.4	16	64	20/6.7	240	4	6	96	8 × 3,600	KVM
d7.6xlarge.4	24	96	25/10	350	8	8	128	12 × 3,600	KVM
d7.8xlarge.4	32	128	30/13.5	450	8	8	192	16 × 3,600	KVM
d7.12xlarge.4	48	192	40/20	650	16	8	256	24 × 3,600	KVM
d7.16xlarge.4	64	256	42/27	850	16	8	256	32 × 3,600	KVM

Table 7-36 D6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
d6.xlarge.4	4	16	5/2	60	2	3	2 × 3,600	KVM
d6.2xlarge.4	8	32	10/4	120	4	4	4 × 3,600	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
d6.4xlarge.4	16	64	20/7.5	240	8	8	8 × 3,600	KVM
d6.6xlarge.4	24	96	25/11	350	8	8	12 × 3,600	KVM
d6.8xlarge.4	32	128	30/15	450	16	8	16 × 3,600	KVM
d6.12xlarge.4	48	192	40/22	650	16	8	24 × 3,600	KVM
d6.16xlarge.4	64	256	42/30	850	32	8	32 × 3,600	KVM
d6.18xlarge.4	72	288	44/34	900	32	8	36 × 3,600	KVM

Table 7-37 D3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
d3.xlarge.8	4	32	2.5/2.5	50	2	3	2 × 1,675	KVM
d3.2xlarge.8	8	64	5/5	100	2	4	4 × 1,675	KVM
d3.4xlarge.8	16	128	10/10	120	4	8	8 × 1,675	KVM
d3.6xlarge.8	24	192	15/15	160	6	8	12 × 1,675	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
d3.8xlarge.8	32	256	20/20	200	8	8	16 × 1,675	KVM
d3.12xlarge.8	48	384	32/32	220	16	8	24 × 1,675	KVM
d3.14xlarge.10	56	560	40/40	500	16	8	28 × 1,675	KVM

Table 7-38 D2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Virtualization
d2.xlarge.8	4	32	3/1	15	2	2 × 1,675	KVM
d2.2xlarge.8	8	64	5/2	30	2	4 × 1,675	KVM
d2.4xlarge.8	16	128	8/4	40	4	8 × 1,675	KVM
d2.6xlarge.8	24	192	10/6	50	6	12 × 1,675	KVM
d2.8xlarge.8	32	256	13/8	60	8	16 × 1,675	KVM
d2.12xlarge.8	48	384	13/13	90	8	24 × 1,675	KVM

Ultra-high I/O ECSs

For more details, see **Ultra-high I/O ECSs**.

Table 7-39 Ultra-high I/O ECS features

Type	Compute	Disk Type	Network
D7i	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • Higher ECS specifications, better network performance • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 44 Gbit/s
Ir7	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 64 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 6,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
I7	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 40 Gbit/s
aI7	• vCPU to memory ratio: 1:8 • Number of vCPUs: 8 to 96 • Basic/Turbo frequency: 2.45GHz/3.5GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 40 Gbit/s
Ir7n	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 64 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 6,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
I7n	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 40 Gbit/s
Ir3	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 32 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,500,000 • Maximum intranet bandwidth: 30 Gbit/s
I3	• vCPU to memory ratio: 1:8 • Number of vCPUs: 8 to 64 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 25 Gbit/s

Table 7-40 D7i ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
d7i.2xlarge.4	8	32	10/3	120	4	4	64	1 × 15360GiB NVMe	KVM
d7i.4xlarge.4	16	64	15/6	200	4	6	96	2 × 15360GiB NVMe	KVM
d7i.8xlarge.4	32	128	25/12	400	8	8	192	4 × 15360GiB NVMe	KVM
d7i.12xlarge.4	48	192	30/18	500	16	8	256	6 × 15360GiB NVMe	KVM
d7i.16xlarge.4	64	256	35/24	600	16	8	256	8 × 15360GiB NVMe	KVM
d7i.24xlarge.4	96	384	44/36	800	32	8	256	12 × 15360GiB NVMe	KVM

Table 7-41 Ir7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
ir7.large.4	2	8	3/0.8	40	2	3	2 × 50	KVM
ir7.xlarge.4	4	16	6/1.5	80	2	3	2 × 100	KVM
ir7.2xlarge.4	8	32	15/3.1	150	4	4	2 × 200	KVM
ir7.4xlarge.4	16	64	20/6.2	300	4	6	2 × 400	KVM
ir7.8xlarge.4	32	128	30/12	400	8	8	2 × 800	KVM
ir7.16xlarge.4	64	256	40/25	600	16	8	2 × 1,600	KVM

Table 7-42 I7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7.2xlarge.4	8	32	10/3	120	4	4	64	1 × 1,600 GiB NVMe	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7.4xlarge.4	16	64	15/6	200	4	6	96	2 × 1,600 GiB NVMe	KVM
i7.8xlarge.4	32	128	25/12	400	8	8	192	4 × 1,600 GiB NVMe	KVM
i7.12xlarge.4	48	192	30/18	500	16	8	256	6 × 1,600 GiB NVMe	KVM
i7.16xlarge.4	64	256	35/24	600	16	8	256	8 × 1,600 GiB NVMe	KVM
i7.24xlarge.4	96	384	44/36	800	32	8	256	12 × 1,600 GiB NVMe	KVM

Table 7-43 aI7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
ai7.2xlarge.8	8	64	4/2.5	100	8	8	64	1 × 1,600 GiB NVMe	KVM
ai7.4xlarge.8	16	128	8/5	200	16	8	128	2 × 1,600 GiB NVMe	KVM
ai7.8xlarge.8	32	256	15/8	300	16	8	256	4 × 1,600 GiB NVMe	KVM
ai7.12xlarge.8	48	384	22/12	400	16	8	256	6 × 1,600 GiB NVMe	KVM
ai7.16xlarge.8	64	512	28/16	550	24	12	256	8 × 1,600 GiB NVMe	KVM
ai7.24xlarge.8	96	768	40/25	800	24	12	256	12 × 1,600 GiB NVMe	KVM

Table 7-44 Ir7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
ir7n.large.4	2	8	3/0.9	40	2	3	32	2 × 50	KVM
ir7n.xlarge.4	4	16	6/1.8	80	2	3	32	2 × 100	KVM
ir7n.2xlarge.4	8	32	15/3.6	150	4	4	64	2 × 200	KVM
ir7n.4xlarge.4	16	64	20/7.3	300	4	6	96	2 × 400	KVM
ir7n.8xlarge.4	32	128	30/14.5	400	8	8	192	2 × 800	KVM
ir7n.16xlarge.4	64	256	40/29	600	16	8	256	2 × 1,600	KVM

Table 7-45 I7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7n.2xlarge.4	8	32	10/3.4	120	4	4	64	1 × 1,600 GiB NVMe	KVM
i7n.4xlarge.4	16	64	15/6.7	200	4	6	96	2 × 1,600 GiB NVMe	KVM
i7n.8xlarge.4	32	128	25/13.5	400	8	8	192	4 × 1,600 GiB NVMe	KVM
i7n.12xlarge.4	48	192	30/20	500	16	8	256	6 × 1,600 GiB NVMe	KVM
i7n.16xlarge.4	64	256	35/27	600	16	8	256	8 × 1,600 GiB NVMe	KVM
i7n.24xlarge.4	96	420	44/20	800	32	8	256	12 × 1,600 GiB NVMe	KVM

Table 7-46 Ir3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Max. NICs	Virtualization
ir3.large.4	2	8	4/1.2	40	2	2 × 50	2	KVM
ir3.xlarge.4	4	16	8/2.4	80	2	2 × 100	3	KVM
ir3.2xlarge.4	8	32	15/4.5	140	4	2 × 200	4	KVM
ir3.4xlarge.4	16	64	20/9	250	8	2 × 400	8	KVM
ir3.8xlarge.4	32	128	30/18	450	16	2 × 800	8	KVM

Table 7-47 I3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Max. NICs	Virtualization
i3.2xlarge.8	8	64	2.5/2.5	100	4	1 × 1,600 GiB NVMe	4	KVM
i3.4xlarge.8	16	128	5/5	150	4	2 × 1,600 GiB NVMe	8	KVM
i3.8xlarge.8	32	256	10/10	200	8	4 × 1,600 GiB NVMe	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Max. NICs	Virtualization
i3.12xlarge.8	48	384	15/15	240	8	6 × 1,600 GiB NVMe	8	KVM
i3.15xlarge.8	60	512	25/25	500	16	7 × 1,600 GiB NVMe	8	KVM
i3.16xlarge.8	64	512	25/25	500	16	8 × 1,600 GiB NVMe	8	KVM

High-Performance Computing ECSs

For more details, see **High-Performance Computing ECSs**.

Table 7-48 High-performance computing ECS features

Flavor	Compute	Disk Type	Network
H3	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 32 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.2 GHz/4.2 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 17 Gbit/s

Flavor	Compute	Disk Type	Network
Hc2	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 32 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.6 GHz/3.5 GHz		• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 600,000 • Maximum intranet bandwidth: 13 Gbit/s

Table 7-49 H3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
h3.large.2	2	4	2/1	30	2	KVM
h3.xlarge.2	4	8	4/2	60	2	KVM
h3.2xlarge.2	8	16	6/3.5	120	4	KVM
h3.3xlarge.2	12	24	6/5.5	160	4	KVM
h3.4xlarge.2	16	32	12/7.5	200	8	KVM
h3.6xlarge.2	24	48	15/11	300	8	KVM
h3.8xlarge.2	32	64	17/15	400	16	KVM
h3.large.4	2	8	2/1	30	2	KVM
h3.xlarge.4	4	16	4/2	60	2	KVM
h3.2xlarge.4	8	32	6/3.5	120	4	KVM
h3.3xlarge.4	12	48	6/5.5	160	4	KVM
h3.4xlarge.4	16	64	12/7.5	200	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
h3.6xlarge.4	24	96	15/11	300	8	KVM
h3.8xlarge.4	32	128	17/15	400	16	KVM

Table 7-50 Hc2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
hc2.large.2	2	4	1.5/0.5	10	1	KVM
hc2.xlarge.2	4	8	3/1	15	1	KVM
hc2.2xlarge.2	8	16	5/2	30	2	KVM
hc2.4xlarge.2	16	32	8/4	40	4	KVM
hc2.8xlarge.2	32	64	13/8	60	8	KVM
hc2.large.4	2	8	1.5/0.5	10	1	KVM
hc2.xlarge.4	4	16	3/1	15	1	KVM
hc2.2xlarge.4	8	32	5/2	30	2	KVM
hc2.4xlarge.4	16	64	8/4	40	4	KVM
hc2.8xlarge.4	32	128	13/8	60	8	KVM

GPU-accelerated ECSs

For more details, see **GPU-accelerated ECSs**.

Table 7-51 GPU-accelerated ECSs

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Graphics-accelerated	G6v	NVIDIA T4 (vGPU virtualization)	2,560	• 8.1 TFLOPS of single-precision floating-point computing • 130 INT8 TOPS • 260 INT4 TOPS	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G6	NVIDIA T4 (GPU passthrough)	2,560	• 8.1 TFLOPS of single-precision floating-point computing • 130 INT8 TOPS • 260 INT4 TOPS	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G5	NVIDIA V100	5,120	• 14 TFLOPS of single-precision floating-point computing • 7 TFLOPS of double-precision floating-point computing • 112 TFLOPS Tensor Cores for deep learning acceleration	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G3	NVIDIA M60 (GPU passthrough)	2,048	4.8 TFLOPS of single-precision floating-point computing	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G1	NVIDIA M60 (GPU virtualization)	2,048	4.8 TFLOPS of single-precision floating-point computing	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Computing-accelerated	P2vs	NVIDIA V100 NVLink (GPU passthrough)	5,120	• 15.7 TFLOPS of single-precision floating-point computing • 7.8 TFLOPS of double-precision floating-point computing • 125 TFLOPS Tensor Cores for deep learning acceleration • 300 GiB/s NVLINK	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding
Computing-accelerated	P2s	NVIDIA V100	5,120	• 14 TFLOPS of single-precision floating-point computing • 7 TFLOPS of double-precision floating-point computing • 112 TFLOPS Tensor Cores for deep learning acceleration	AI deep learning training, scientific computing, computational fluid dynamics, computational finance, seismic analysis, molecular modeling, and genomics.

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Computing-accelerated	P2v	NVIDIA V100 NVLink (GPU passthrough)	5,120	• 15.7 TFLOPS of single-precision floating-point computing • 7.8 TFLOPS of double-precision floating-point computing • 125 TFLOPS Tensor Cores for deep learning acceleration • 300 GiB/s NVLINK	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding
Inference-accelerated	Pi2	NVIDIA T4 (GPU passthrough)	2,560	• 8.1 TFLOPS of single-precision floating-point computing • 130 INT8 TOPS • 260 INT4 TOPS	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Inference-accelerated	Pi1	NVIDIA P4 (GPU passthrough)	2,560	5.5 TFLOPS of single-precision floating-point computing	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding

Table 7-52 G6v ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g6v.2xlarge.2	8	16	6/2	35	4	1/8 × T4	2	KVM
g6v.2xlarge.4	8	32	10/4	50	4	1/4 × T4	4	KVM
g6v.4xlarge.4	16	64	15/8	100	8	1/2 × T4	8	KVM

Table 7-53 G6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Memory (GiB)	Virtualization
g6.xlarge.4	4	16	6/2	200	8	8	1 × T4	16	KVM
g6.4xlarge.4	16	64	15/8	200	8	8	1 × T4	16	KVM
g6.6xlarge.4	24	96	25/15	200	8	8	1 × T4	16	KVM
g6.9xlarge.7	36	252	25/15	200	16	8	1 × T4	16	KVM
g6.10xlarge.7	40	280	25/15	200	16	8	1 × T4	16	KVM
g6.18xlarge.7	72	504	30/30	400	32	16	2 × T4	32	KVM
g6.20xlarge.7	80	560	30/30	400	32	16	2 × T4	32	KVM

Table 7-54 G5 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g5.4xlarge.4	16	64	15/8	100	8	V100-8Q	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g5.8xlarge.4	32	128	25/15	200	16	1 × V100	16	KVM

Table 7-55 G3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g3.4xlarge.4	16	64	8/2.5	50	2	1 x M60	1 x 8	KVM
g3.8xlarge.4	32	128	10/5	100	4	2 x M60	2 x 8	KVM

Table 7-56 G1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth	Max. PPS	GPUs	GPU Memory (GiB)	Virtualization
g1.xlarge	4	8	Medium	Medium	1 × M60-1Q	1	Xen
g1.xlarge.4	4	16	Medium	Medium	1 × M60-1Q	1	Xen
g1.2xlarge	8	16	Medium	Medium	1 × M60-2Q	2	Xen
g1.2xlarge.8	8	64	Medium	Medium	Passthrough	8	Xen

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth	Max. PPS	GPUs	GPU Memory (GiB)	Virtualization
g1.4xlarge	16	32	Medium	Medium	1 × M60-4Q	4	Xen

Table 7-57 P2vs ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Connection	GPU Memory (GiB)	Virtualization
p2vs.2xlarge.8	8	64	10/4	50	4	1 × V100	N/A	1 × 32 GiB	KVM
p2vs.4xlarge.8	16	128	15/8	100	8	2 × V100	NVLink	2 × 32 GiB	KVM
p2vs.8xlarge.8	32	256	25/15	200	16	4 × V100	NVLink	4 × 32 GiB	KVM
p2vs.16xlarge.8	64	512	30/30	400	32	8 × V100	NVLink	8 × 32 GiB	KVM

Table 7-58 P2s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Connection	GPU Memory (GiB)	Virtualization
p2s.2xlarge.8	8	64	10/4	50	4	4	1 × V100	PCIe Gen 3	1 × 32 GiB	KVM
p2s.4xlarge.8	16	128	15/8	100	8	8	2 × V100	PCIe Gen 3	2 × 32 GiB	KVM
p2s.8xlarge.8	32	256	25/15	200	16	8	4 × V100	PCIe Gen 3	4 × 32 GiB	KVM
p2s.16xlarge.8	64	512	30/30	400	32	8	8 × V100	PCIe Gen 3	8 × 32 GiB	KVM

Table 7-59 P2v ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Connection	GPU Memory (GiB)	Virtualization
p2v.2xlarge.8	8	64	10/4	50	4	4	1 × V100	N/A	1 × 16 GiB	KVM
p2v.4xlarge.8	16	128	15/8	100	8	8	2 × V100	NVLink	2 × 16 GiB	KVM
p2v.8xlarge.8	32	256	25/15	200	16	8	4 × V100	NVLink	4 × 16 GiB	KVM
p2v.16xlarge.8	64	512	30/30	400	32	8	8 × V100	NVLink	8 × 16 GiB	KVM

Table 7-60 Pi2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Memory (GiB)	Local Disks	Virtualization
pi2.2xlarge.4	8	32	10/4	50	4	4	1 × T4	1 × 16	N/A	KVM
pi2.4xlarge.4	16	64	15/8	100	8	8	2 × T4	2 × 16	N/A	KVM
pi2.8xlarge.4	32	128	25/15	200	16	8	4 × T4	4 × 16	N/A	KVM

Table 7-61 Pi1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Local Disks	Virtualization
pi1.2xlarge.4	8	32	5/1.6	40	2	1 × P4	1 × 8 GiB	N/A	KVM
pi1.4xlarge.4	16	64	8/3.2	70	4	2 × P4	2 × 8 GiB	N/A	KVM
pi1.8xlarge.4	32	128	10/6.5	140	8	4 × P4	4 × 8 GiB	N/A	KVM

AI-accelerated ECSs

For more details, see **AI-accelerated ECSs**.

Table 7-62 AI-accelerated ECS features

Type	Compute	Disk Type	Network
Ai1s	• vCPU to memory ratio: 1:4 or 1:2 • Number of vCPUs: 2 to 32 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 2,000,000 • Maximum intranet bandwidth: 25 Gbit/s
Ai1	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 32 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz		

Table 7-63 Ai1s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS (10,000)	Ascend 310 Processors	Ascend RAM (GiB)	Max. NIC Queues	Max. NICs	Virtualization
ai1s.large.4	2	8	4/1.3	20	1	8	2	2	KVM
ai1s.xlarge.4	4	16	6/2	35	2	16	2	3	KVM
ai1s.2xlarge.4	8	32	10/4	50	4	32	4	4	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS (10,000)	Ascend 310 Processors	Ascend RAM (GiB)	Max. NIC Queues	Max. NICs	Virtualization
ai1s.4xlarge.4	16	64	15/8	100	8	64	8	8	KVM
ai1s.8xlarge.4	32	128	25/15	200	16	128	8	8	KVM

Table 7-64 Ai1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS (10,000)	Ascend 310 Processors	Ascend RAM (GiB)	Max. NIC Queues	Max. NICs	Virtualization
ai1.large.4	2	8	4/1.3	20	1	8	2	2	KVM
ai1.xlarge.4	4	16	6/2	35	2	16	2	3	KVM
ai1.2xlarge.4	8	32	10/4	50	4	32	4	4	KVM
ai1.4xlarge.4	16	64	15/8	100	8	64	8	8	KVM
ai1.8xlarge.4	32	128	25/15	200	16	128	8	8	KVM

7.2 General Computing ECSs

Overview

General computing ECSs provide a balance of compute, memory, and networking resources and a baseline level of vCPU performance with the ability to burst above

the baseline. These ECSs are suitable for general workloads, such as web servers, enterprise R&D, and small-scale databases.

Available now: S7, S7n, S6, Sn3, S3, and S2

Table 7-65 General computing ECS features

Type	Compute	Disk Type	Network
S7	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 8 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.8 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • An ECS with higher specifications has better network performance. • Maximum packets per second (PPS): 500,000 • Maximum intranet bandwidth: 3 Gbit/s
S7n	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 8 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 500,000 • Maximum intranet bandwidth: 3 Gbit/s
S6	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 8 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 500,000 • Maximum intranet bandwidth: 3 Gbit/s

Type	Compute	Disk Type	Network
Sn3	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.2 GHz/3.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 1,000,000 • Maximum intranet bandwidth: 6 Gbit/s
S3	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.2 GHz/3.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum PPS: 300,000 • Maximum intranet bandwidth: 4 Gbit/s
S2	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.4 GHz/3.3 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• An ECS with higher specifications has better network performance. • Maximum PPS: 300,000 • Maximum intranet bandwidth: 4 Gbit/s

S7

Overview

General computing S7 ECSs use the 3rd generation Intel® Xeon® Scalable processors and 25GE high-speed intelligent NICs to provide high network bandwidth and PPS.

Scenarios

- Websites and web applications that have high requirements on PPS throughput

- Lightweight databases and cache servers
- Light- and medium-load enterprise applications

Specifications

Table 7-66 S7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
s7.small.1	1	1	0.8/0.1	10	1	2	4	KVM
s7.medium.2	1	2	0.8/0.1	10	1	2	4	KVM
s7.large.2	2	4	1.5/0.2	15	1	2	8	KVM
s7.xlarge.2	4	8	2/0.35	25	1	2	16	KVM
s7.2xlarge.2	8	16	3/0.75	50	2	2	32	KVM
s7.medium.4	1	4	0.8/0.1	10	1	2	4	KVM
s7.large.4	2	8	1.5/0.2	15	1	2	8	KVM
s7.xlarge.4	4	16	2/0.35	25	1	2	16	KVM
s7.2xlarge.4	8	32	3/0.75	50	2	2	32	KVM

S7n

Overview

General-purpose S7n ECSs use the 3rd generation Intel® Xeon® Scalable processors and 25GE high-speed intelligent NICs to provide high network bandwidth and PPS.

Scenarios

- Websites and web applications that have high requirements on PPS throughput
- Lightweight databases and cache servers
- Light- and medium-load enterprise applications

Specifications

Table 7-67 S7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
s7n.small.1	1	1	0.8/0.1	10	1	2	4	KVM
s7n.medium.2	1	2	0.8/0.1	10	1	2	4	KVM
s7n.large.2	2	4	1.5/0.2	15	1	2	8	KVM
s7n.xlarge.2	4	8	2/0.35	25	1	2	16	KVM
s7n.2xlarge.2	8	16	3/0.75	50	2	2	32	KVM
s7n.medium.4	1	4	0.8/0.1	10	1	2	4	KVM
s7n.large.4	2	8	1.5/0.2	15	1	2	8	KVM
s7n.xlarge.4	4	16	2/0.35	25	1	2	16	KVM
s7n.2xlarge.4	8	32	3/0.75	50	2	2	32	KVM

General Computing S6

Overview

General computing S6 ECSs use the 2nd generation Intel® Xeon® Scalable processors and self-developed 25GE high-speed intelligent NICs to provide high network bandwidth and packets per second (PPS). For details, see **Table 7-65**.

Notes

S6 ECS burstable performance is neither restricted by CPU credits nor billed for additional credits.

Scenarios

- Websites and web applications that have high requirements on PPS throughput
- Lightweight databases and cache servers
- Light- and medium-load enterprise applications

Specifications

Table 7-68 S6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
s6.small.1	1	1	0.8/0.1	10	1	2	KVM
s6.medium.2	1	2	0.8/0.1	10	1	2	KVM
s6.large.2	2	4	1.5/0.2	15	1	2	KVM
s6.xlarge.2	4	8	2/0.35	25	1	2	KVM
s6.2xlarge.2	8	16	3/0.75	50	2	2	KVM
s6.medium.4	1	4	0.8/0.1	10	1	2	KVM
s6.large.4	2	8	1.5/0.2	15	1	2	KVM
s6.xlarge.4	4	16	2/0.35	25	1	2	KVM
s6.2xlarge.4	8	32	3/0.75	50	2	2	KVM

Sn3

Overview

Working in 25 GiB/s networks, Sn3 ECSs offer higher bandwidths, lower latency, more stable computing performance, and high PPS that are cost-effective.

Scenarios

- Websites and web applications that have high requirements on PPS throughput
- Lightweight databases and cache servers

- Light- and medium-load enterprise applications

Specifications

Table 7-69 Sn3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
sn3.small.1	1	1	0.8/0.2	10	1	1	KVM
sn3.medium.2	1	2	0.8/0.2	10	1	1	KVM
sn3.large.2	2	4	1.5/0.35	15	1	2	KVM
sn3.xlarge.2	4	8	2/0.7	25	1	2	KVM
sn3.2xlarge.2	8	16	3/1.3	50	2	2	KVM
sn3.4xlarge.2	16	32	6/2.5	100	4	2	KVM
sn3.medium.4	1	4	0.8/0.2	10	1	1	KVM
sn3.large.4	2	8	1.5/0.35	15	1	2	KVM
sn3.xlarge.4	4	16	2/0.7	25	1	2	KVM
sn3.2xlarge.4	8	32	3/1.3	50	2	2	KVM
sn3.4xlarge.4	16	64	6/2.5	100	4	2	KVM

General Computing S3

Overview

S3 ECSs use Intel® Xeon® Scalable processors, which significantly improve the comprehensive performance. They provide a balance of compute, memory, and networking resources and a baseline level of vCPU performance with the ability to burst above the baseline.

Scenarios

- Websites and web applications
- Lightweight databases and cache servers
- Light- and medium-load enterprise applications

Specifications

Table 7-70 S3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
s3.small.1	1	1	0.5/0.1	5	1	KVM
s3.medium.2	1	2	0.5/0.1	5	1	KVM
s3.large.2	2	4	0.8/0.2	10	1	KVM
s3.xlarge.2	4	8	1.5/0.4	15	1	KVM
s3.2xlarge.2	8	16	3/0.8	20	2	KVM
s3.4xlarge.2	16	32	4/1.5	30	4	KVM
s3.medium.4	1	4	0.5/0.1	5	1	KVM
s3.large.4	2	8	0.8/0.2	10	1	KVM
s3.xlarge.4	4	16	1.5/0.4	15	1	KVM
s3.2xlarge.4	8	32	3/0.8	20	2	KVM
s3.4xlarge.4	16	64	4/1.5	30	4	KVM

General Computing S2

Overview

S2 ECSs use the latest-generation KVM virtualization platform and non-uniform memory access (NUMA) architecture to provide higher computing performance.

Scenarios

- Websites and web applications
- Lightweight databases and cache servers

- Light- and medium-load enterprise applications

Specifications

Table 7-71 S2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
s2.small.1	1	1	0.5/0.1	5	1	KVM
s2.medium.2	1	2	0.5/0.1	5	1	KVM
s2.large.2	2	4	0.8/0.2	10	1	KVM
s2.xlarge.2	4	8	1.5/0.4	15	1	KVM
s2.2xlarge.2	8	16	3/0.8	20	2	KVM
s2.4xlarge.2	16	32	4/1.5	30	4	KVM
s2.8xlarge.2	32	64	6/3	50	8	KVM
s2.medium.4	1	4	0.5/0.1	5	1	KVM
s2.large.4	2	8	0.8/0.2	10	1	KVM
s2.xlarge.4	4	16	1.5/0.4	15	1	KVM
s2.2xlarge.4	8	32	3/0.8	20	2	KVM
s2.4xlarge.4	16	64	4/1.5	30	4	KVM
s2.8xlarge.4	32	128	6/3	50	8	KVM

7.3 General Computing-plus ECSs

Overview

General computing-plus ECSs use dedicated vCPUs to deliver powerful performance. In addition, the ECSs use the latest-generation network acceleration engines and Data Plane Development Kit (DPDK) to provide high network performance.

Available now: C7, C7n, C7t, C7h, aC7, C6s, C6h, C3ne, C3, and C6

Table 7-72 General computing ECS features

Flavor	Compute	Disk Type	Network
C7	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 128 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz and 2.8 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 12,000,000 • Maximum intranet bandwidth: 42 Gbit/s
General computing-plus aC7	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 232 • Basic/Turbo frequency: 2.45GHz/3.5GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 20,000,000 • Maximum intranet bandwidth: 100 Gbit/s
General computing-plus C7n	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,500,000 • Maximum intranet bandwidth: 40 Gbit/s

Flavor	Compute	Disk Type	Network
General computing-plus C7t	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 128 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.8 GHz/3.5 GHz	• General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2 • Extreme SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 30 million PPS • Maximum intranet bandwidth: 90 Gbit/s
General computing-plus C7h	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 128 or 152 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.8 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 30 million PPS • Maximum intranet bandwidth: 100 Gbit/s
C6s	• vCPU to memory ratio: 1:2 • Number of vCPUs: 2 to 64 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,500,000 • Maximum intranet bandwidth: 30 Gbit/s

Flavor	Compute	Disk Type	Network
C6h	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 88 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 44 Gbit/s • Support for RDMA
C6	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 64 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
C3ne	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Flavor	Compute	Disk Type	Network
C3	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 16 Gbit/s

C7

Overview

C7 ECSs use the third-generation Intel® Xeon® Scalable processors to provide enhanced computing, security, and stability. A C7 ECS can have a maximum number of 128 vCPUs and a memory speed of 3200 MHz. C7 ECSs support secure boot, providing a secure and trusted cloud environment.

Notes

C7 ECSs can only have SCSI disks attached. The device identifier of a SCSI disk is WWN.

Scenarios

Medium- and heavy-load enterprise applications with strict requirements on computing and network performance, such as web applications, e-commerce platforms, short video platforms, online games, and insurance and finance.

Specifications

Table 7-73 C7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7.large.2	2	4	4/0.8	40	2	2	16	Qing Tian

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7.xlarge.2	4	8	8/1.6	80	2	3	32	
c7.2xlarge.2	8	16	15/3	150	4	4	64	
c7.3xlarge.2	12	24	17/5	200	4	6	96	
c7.4xlarge.2	16	32	20/6	280	8	8	128	
c7.6xlarge.2	24	48	25/9	400	8	8	192	
c7.8xlarge.2	32	64	30/12	550	16	8	256	
c7.12xlarge.2	48	96	35/18	750	16	8	256	
c7.16xlarge.2	64	128	36/24	1,000	28	8	256	
c7.24xlarge.2	96	192	40/36	1,100	32	8	256	
c7.32xlarge.2	128	256	42/40	1,200	32	8	256	
c7.large.4	2	8	4/0.8	40	2	2	16	
c7.xlarge.4	4	16	8/1.6	80	2	3	32	
c7.2xlarge.4	8	32	15/3	150	4	4	64	
c7.3xlarge.4	12	48	17/5	200	4	6	96	
c7.4xlarge.4	16	64	20/6	280	8	8	128	
c7.6xlarge.4	24	96	25/9	400	8	8	192	
c7.8xlarge.4	32	128	30/12	550	16	8	256	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7.12xlarge.4	48	192	35/18	750	16	8	256	
c7.16xlarge.4	64	256	36/24	1,000	28	8	256	
c7.24xlarge.4	96	384	40/36	1,100	32	8	256	
c7.32xlarge.4	128	512	42/40	1,200	32	8	256	

C7t

Overview

C7t ECSs use the third-generation Intel ® Xeon ® scalable processor and the latest QingTian architecture to meet trusted computing and Internet connection requirements.

Scenarios

- Finance and government
- Internet communication that requires high PPS, such as on-screen comments and real-time voice

Specifications

Table 7-74 C7t ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7t.large.2	2	4	10/1.28	80	2	2	16	QingTian
c7t.xlarge.2	4	8	16/2.56	150	2	3	32	
c7t.2xlarge.2	8	16	20/4	200	4	4	64	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7t.3xlarge.2	12	24	34/6.4	300	4	6	96	
c7t.4xlarge.2	16	32	40/8	400	8	8	128	
c7t.6xlarge.2	24	48	50/14.4	600	8	8	192	
c7t.8xlarge.2	32	64	60/16	800	16	8	256	
c7t.12xlarge.2	48	96	70/28.8	1200	16	8	256	
c7t.16xlarge.2	64	128	72/32	1500	28	8	256	
c7t.24xlarge.2	96	192	80/40	2400	32	8	256	
c7t.32xlarge.2	128	256	90/48	3000	32	8	256	
c7t.large.4	2	8	10/1.28	80	2	2	16	
c7t.xlarge.4	4	16	16/2.56	150	2	3	32	
c7t.2xlarge.4	8	32	20/4	200	4	4	64	
c7t.3xlarge.4	12	48	34/6.4	300	4	6	96	
c7t.4xlarge.4	16	64	40/8	400	8	8	128	
c7t.6xlarge.4	24	96	50/14.4	600	8	8	192	
c7t.8xlarge.4	32	128	60/16	800	16	8	256	
c7t.12xlarge.4	48	192	70/28.8	1200	16	8	256	
c7t.16xlarge.4	64	256	72/32	1500	28	8	256	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7t.24xlarge.4	96	384	80/40	2400	32	8	256	

General computing-plus C7h

Overview

C7h ECSs use the 3rd-generation Intel® Xeon® Scalable processor and support Huawei Cloud vRoCE, so RDMA networks can provide them with high bandwidth and just microseconds of latency, exactly what is needed for tightly coupled HPC simulations.

Scenarios

- High-performance computing and computer simulation
- Big data applications
- AI training and inference

Specifications

Table 7-75 C7h ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c7h.32xlarge.2.physical	128	256	44/40	1,000	16	33	BMS
c7h.38xlarge.2.physical	152	512	100/90	3000	32	32	BMS
c7h.32xlarge.4.physical	128	512	44/40	1,000	16	33	BMS
c7h.38xlarge.4.physical	152	768	100/90	3000	32	32	BMS

General computing-plus aC7

Overview

aC7 ECSs use the latest-generation scalable processors to provide enhanced computing, security, and stability. An aC7 ECS can have a maximum number of 232 vCPUs and a memory speed of 3,200 MHz.

Notes

aC7 ECSs offer an intranet bandwidth of up to 100 Gbit/s and network forwarding capacity of up to 20 million PPS. When the bandwidth is higher than 50 Gbit/s and the network forwarding packets exceed 10 million PPS, you can use DPDK to mask the differences among ECS kernel protocol stacks to get the actual network performance.

Scenarios

Medium- and heavy-load enterprise applications with strict requirements on computing and network performance, such as web applications, e-commerce platforms, short video platforms, online games, and insurance and finance.

Specifications

Table 7-76 aC7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
ac7.large.2	2	4	2/1	40	2	2	16	KVM
ac7.xlarge.2	4	8	3/1.5	60	2	3	32	
ac7.2xlarge.2	8	16	4/2.5	100	4	4	64	
ac7.3xlarge.2	12	24	6/4	150	4	6	96	
ac7.4xlarge.2	16	32	8/5	200	8	8	128	
ac7.6xlarge.2	24	48	12/6	250	8	8	192	
ac7.8xlarge.2	32	64	15/8	300	16	8	256	
ac7.12xlarge.2	48	96	22/12	400	16	8	256	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
ac7.16xlarge.2	64	128	28/16	550	24	12	256	
ac7.24xlarge.2	96	192	40/25	800	24	12	256	
ac7.29xlarge.2	116	216	50/30	950	32	16	256	
ac7.32xlarge.2	128	256	55/35	1,000	32	16	256	
ac7.48xlarge.2	192	384	100/80	1,600	32	16	256	
ac7.58xlarge.2	232	432	120/100	2,000	32	16	256	
ac7.large.4	2	8	2/1	40	2	2	16	
ac7.xlarge.4	4	16	3/1.5	60	2	3	32	
ac7.2xlarge.4	8	32	4/2.5	100	4	4	64	
ac7.3xlarge.4	12	48	6/4	150	4	6	96	
ac7.4xlarge.4	16	64	8/5	200	8	8	128	
ac7.6xlarge.4	24	96	12/6	250	8	8	192	
ac7.8xlarge.4	32	128	15/8	300	16	8	256	
ac7.12xlarge.4	48	192	22/12	400	16	8	256	
ac7.16xlarge.4	64	256	28/16	550	24	12	256	
ac7.24xlarge.4	96	384	40/25	800	24	12	256	
ac7.29xlarge.4	116	464	50/30	950	32	16	256	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
ac7.32xlarge.4	128	512	55/35	1,000	32	16	256	
ac7.48xlarge.4	192	768	100/80	1,600	32	16	256	
ac7.58xlarge.4	232	928	120/100	2,000	32	16	256	

General computing-plus C7n

Overview

C7n ECSs use the third-generation Intel® Xeon® Scalable processors to provide enhanced computing, security, and stability. A C7n ECS can have a maximum number of 96 vCPUs and a memory speed of 3,200 MHz. C7n ECSs support secure boot, providing a secure and trusted cloud environment.

Scenarios

Medium- and heavy-load enterprise applications with strict requirements on computing and network performance, such as web applications, e-commerce platforms, short video platforms, online games, and insurance and finance.

Specifications

Table 7-77 C7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7n.large.2	2	4	4/0.8	40	2	2	16	KVM
c7n.xlarge.2	4	8	8/1.6	80	2	3	32	KVM
c7n.2xlarge.2	8	16	15/3	150	4	4	64	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7n.3xlarge.2	12	24	17/5	200	4	6	96	KVM
c7n.4xlarge.2	16	32	20/6	280	8	8	128	KVM
c7n.6xlarge.2	24	48	25/9	400	8	8	192	KVM
c7n.8xlarge.2	32	64	30/12	550	16	8	256	KVM
c7n.12xlarge.2	48	96	35/18	750	16	8	256	KVM
c7n.16xlarge.2	64	128	36/24	800	28	8	256	KVM
c7n.24xlarge.2	96	192	40/36	850	32	8	256	KVM
c7n.large.4	2	8	4/0.8	40	2	2	16	KVM
c7n.xlarge.4	4	16	8/1.6	80	2	3	32	KVM
c7n.2xlarge.4	8	32	15/3	150	4	4	64	KVM
c7n.3xlarge.4	12	48	17/5	200	4	6	96	KVM
c7n.4xlarge.4	16	64	20/6	280	8	8	128	KVM
c7n.6xlarge.4	24	96	25/9	400	8	8	192	KVM
c7n.8xlarge.4	32	128	30/12	550	16	8	256	KVM
c7n.12xlarge.4	48	192	35/18	750	16	8	256	KVM
c7n.16xlarge.4	64	256	36/24	800	28	8	256	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
c7n.24xlarge.4	96	384	40/36	850	32	8	256	KVM

General Computing-plus C6s

Overview

C6s ECSs use the second-generation Intel® Xeon® Scalable processors that feature high performance, stability, low latency, and cost-effectiveness.

Scenarios

Internet, gaming, and rendering scenarios, especially those with strict requirements on computing and network stability

- Gaming: C6s ECSs meet requirements of high performance and stability.
- Rendering: C6s ECSs provide high-quality rendering at the most optimal cost.
- Other scenarios: C6s ECSs support gaming acceleration, video bullet screen, website building, and app development.

Specifications

Table 7-78 C6s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6s.large.2	2	4	1/1	30	2	2	KVM
c6s.xlarge.2	4	8	2/2	60	2	3	KVM
c6s.2xlarge.2	8	16	4/4	120	4	4	KVM
c6s.3xlarge.2	12	24	5.5/5.5	180	4	6	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6s.4xlarge.2	16	32	7.5/7.5	240	8	8	KVM
c6s.6xlarge.2	24	48	11/11	350	8	8	KVM
c6s.8xlarge.2	32	64	15/15	450	16	8	KVM
c6s.12xlarge.2	48	96	22/22	650	16	8	KVM
c6s.16xlarge.2	64	128	30/30	850	32	8	KVM
c6s.large.4	2	8	1/1	30	2	2	KVM
c6s.xlarge.4	4	16	2/2	60	2	3	KVM
c6s.2xlarge.4	8	32	4/4	120	4	4	KVM
c6s.3xlarge.4	12	48	5.5/5.5	180	4	6	KVM
c6s.4xlarge.4	16	64	7.5/7.5	240	8	8	KVM
c6s.6xlarge.4	24	96	11/11	350	8	8	KVM
c6s.8xlarge.4	32	128	15/15	450	16	8	KVM
c6s.12xlarge.4	48	192	22/22	650	16	8	KVM
c6s.16xlarge.4	64	256	30/30	850	32	8	KVM

C6h

Overview

C6h ECSs use the second-generation Intel® Xeon® Scalable processor and support Huawei Cloud vRoCE, so RDMA networks can provide them with high bandwidth and just microseconds of latency, exactly what is needed for tightly coupled HPC simulations.

Scenarios

- High-performance computing and computer simulation
- Big data applications
- AI training and inference

Specifications

Table 7-79 C6h ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6h.22xlarge.2.physical	88	192	44/40	1,000	16	33	BMS
c6h.22xlarge.4.physical	88	384	44/40	1,000	16	33	BMS

General Computing-plus C6

Overview

C6 ECSs use second-generation Intel® Xeon® Scalable processors to provide powerful and stable computing performance. By using 25GE high-speed intelligent NICs, C6 ECSs offer ultra-high network bandwidth and PPS.

Scenarios

- Websites and web applications that require high computing and network performance
- General databases and cache servers
- Medium- and heavy-load enterprise applications
- Gaming and rendering

Specifications

Table 7-80 C6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6.large.2	2	4	4/1.2	40	2	2	KVM
c6.xlarge.2	4	8	8/2.4	80	2	3	KVM
c6.2xlarge.2	8	16	15/4.5	150	4	4	KVM
c6.3xlarge.2	12	24	17/7	200	4	6	KVM
c6.4xlarge.2	16	32	20/9	280	8	8	KVM
c6.6xlarge.2	24	48	25/14	400	8	8	KVM
c6.8xlarge.2	32	64	30/18	550	16	8	KVM
c6.12xlarge.2	48	96	35/27	750	16	8	KVM
c6.16xlarge.2	64	128	40/36	1,000	32	8	KVM
c6.22xlarge.2	88	176	44/40	1,200	32	8	KVM
c6.22xlarge.2.physical	88	192	44/40	1,000	16	33	BMS
c6.large.4	2	8	4/1.2	40	2	2	KVM
c6.xlarge.4	4	16	8/2.4	80	2	3	KVM
c6.2xlarge.4	8	32	15/4.5	150	4	4	KVM
c6.3xlarge.4	12	48	17/7	200	4	6	KVM
c6.4xlarge.4	16	64	20/9	280	8	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c6.6xlarge.4	24	96	25/14	400	8	8	KVM
c6.8xlarge.4	32	128	30/18	550	16	8	KVM
c6.12xlarge.4	48	192	35/27	750	16	8	KVM
c6.16xlarge.4	64	256	40/36	1,000	32	8	KVM
c6.22xlarge.4	88	352	44/40	1,200	28	8	KVM
c6.22xlarge.4.physical	88	384	44/40	1,000	16	33	BMS

General Computing-plus C3ne ECSs

Overview

C3ne ECSs provide higher computing and network forwarding capabilities than C3 ECSs. Using Intel® Xeon® Scalable processors and 25GE high-speed intelligent NICs, C3ne ECSs provide a maximum intranet bandwidth of 40 Gbit/s and 10 million PPS for enterprise-grade applications with high network performance requirements.

Scenarios

- Websites and web applications that require high computing and network performance
- General databases and cache servers
- Medium- and heavy-load enterprise applications
- Gaming and rendering

Specifications

Table 7-81 C3ne ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
c3ne.large.2	2	4	4/1.3	40	2	2	KVM
c3ne.xlarge.2	4	8	8/2.5	80	2	3	KVM
c3ne.2xlarge.2	8	16	15/5	150	4	4	KVM
c3ne.4xlarge.2	16	32	20/10	280	8	8	KVM
c3ne.8xlarge.2	32	64	30/20	550	16	8	KVM
c3ne.15xlarge.2	60	128	40/40	1,000	32	8	KVM
c3ne.large.4	2	8	4/1.3	40	2	2	KVM
c3ne.xlarge.4	4	16	8/2.5	80	2	3	KVM
c3ne.2xlarge.4	8	32	15/5	150	4	4	KVM
c3ne.4xlarge.4	16	64	20/10	280	8	8	KVM
c3ne.8xlarge.4	32	128	30/20	550	16	8	KVM
c3ne.15xlarge.4	60	256	40/40	1,000	32	8	KVM

General Computing-plus C3 ECSs

Overview

C3 ECSs use Intel® Xeon® Scalable processors and high-performance NICs to provide high performance and stability for enterprise-grade applications.

Scenarios

Small- and medium-scale databases, cache servers, and search clusters with high requirements on stability; enterprise-grade applications

Specifications

Table 7-82 C3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
c3.large.2	2	4	1.5/0.6	30	2	KVM
c3.xlarge.2	4	8	3/1	50	2	KVM
c3.2xlarge.2	8	16	5/2	90	4	KVM
c3.3xlarge.2	12	24	7/3	110	4	KVM
c3.4xlarge.2	16	32	10/4	130	4	KVM
c3.6xlarge.2	24	48	12/6	200	8	KVM
c3.8xlarge.2	32	64	15/8	260	8	KVM
c3.15xlarge.2	60	128	16/16	500	16	KVM
c3.large.4	2	8	1.5/0.6	30	2	KVM
c3.xlarge.4	4	16	3/1	50	2	KVM
c3.2xlarge.4	8	32	5/2	90	4	KVM
c3.3xlarge.4	12	48	7/3	110	4	KVM
c3.4xlarge.4	16	64	10/4	130	4	KVM
c3.6xlarge.4	24	96	12/6	200	8	KVM
c3.8xlarge.4	32	128	15/8	260	8	KVM
c3.15xlarge.4	60	256	16/16	500	16	KVM

7.4 General Computing-Basic ECSs

General Computing-Basic T6

Overview

General computing-basic ECSs are suitable for scenarios that require moderate CPU performance generally but burstable high performance occasionally while keeping costs low. The performance of such ECSs is constrained by the baseline performance and CPU credits.

NOTE

- Before using general computing-basic ECSs, learn about the concepts related to CPU credits by referring to **CPU Credits of T6 ECSs**.
- CPU credits do not incur additional costs. For more information about CPU credits, see **CPU Credits**.

Table 7-83 General computing ECS features

Type	Compute	Disk Type	Network
T6	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 16 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.2 GHz/3.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• An ECS with higher specifications has better network performance. • Maximum packets per second (PPS): 600,000 • Maximum intranet bandwidth: 3 Gbit/s

Notes

General computing-basic T6 ECSs are suitable for scenarios that require moderate CPU performance generally but burstable high performance occasionally. The performance of such ECSs is constrained by the baseline performance and CPU credits. After a T6 ECS is created, you can view its CPU credits by choosing **More** > **Manage Credits** in the **Operation** column.

Scenarios

General computing-basic ECSs are suitable for applications that require moderate CPU performance generally but burstable high performance occasionally, such as web application servers, light-load applications, and microservices.

Specifications

Table 7-84 T6 ECS specifications

Flavor	vCPUs	Memory (GiB)	CPU Baseline (%)	Average CPU Baseline (%)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NICs	Virtualization
t6.small.1	1	1	10	10	0.3/0.05	6	1	KVM
t6.large.1	2	2	40	20	0.5/0.1	10	1	KVM
t6.xlarge.1	4	4	80	20	1/0.2	20	2	KVM
t6.2xlarge.1	8	8	120	15	2/0.4	40	2	KVM
t6.4xlarge.1	16	16	240	15	3/0.8	60	2	KVM
t6.medium.2	1	2	10	10	0.3/0.05	6	1	KVM
t6.large.2	2	4	40	20	0.5/0.1	10	1	KVM
t6.xlarge.2	4	8	80	20	1/0.2	20	2	KVM
t6.2xlarge.2	8	16	120	15	2/0.4	40	2	KVM
t6.4xlarge.2	16	32	240	15	3/0.8	60	2	KVM
t6.large.4	2	8	40	20	0.5/0.1	10	1	KVM
t6.xlarge.4	4	16	80	20	1/0.2	20	2	KVM

Flavor	vCPUs	Memory (GiB)	CPU Baseline (%)	Average CPU Baseline (%)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NICs	Virtualization
t6.2xlarge.4	8	32	120	15	2/0.4	40	2	KVM

CPU Credits of T6 ECSs

- **Initial CPU credits**: After a T6 ECS is created, it automatically obtains initial CPU credits. Initial CPU credits are allocated only after an ECS is created.

  For example, after a t6.large.1 ECS is created, it obtains 60 initial CPU credits.
- **Maximum CPU credits**: If the CPU usage is below the baseline, credits earned (accrued credits) are greater than credits spent. The accrued credits will not expire on a running ECS. When the credits reach the maximum value allowed (depending on the ECS flavor), no more credits will be earned.

  For example, the maximum number of CPU credits for a t6.large.1 ECS is 576. When the credits reach 576, no more credits will be earned. When the credits are below 576, credits can be earned again.
- **CPU credits earned per hour**: The number of CPU credits earned by an ECS per hour reflects the CPU baseline. One CPU credit is equal to one vCPU running at 100% usage for one minute.

  For example, a t6.large.1 ECS can earn 24 CPU credits per hour.

For more information about CPU usage calculations, see **CPU Credits**.

Table 7-85 CPU credits of T6 ECSs

Flavor	Initial CPU Credits	Maximum CPU Credits	CPU Credits Earned per Hour
t6.small.1	30	144	6
t6.large.1	60	576	24
t6.xlarge.1	120	1,152	48
t6.2xlarge.1	120	1,728	72
t6.4xlarge.1	160	3,456	144
t6.medium.2	30	144	6
t6.large.2	60	576	24
t6.xlarge.2	120	1,152	48
t6.2xlarge.2	120	1,728	72

Flavor	Initial CPU Credits	Maximum CPU Credits	CPU Credits Earned per Hour
t6.4xlarge.2	160	3,456	144
t6.large.4	60	576	24
t6.xlarge.4	120	1,152	48
t6.2xlarge.4	120	1,728	72

7.5 Memory-optimized ECSs

Overview

Memory-optimized ECSs have a large memory size and provide high memory performance. They are designed for memory-intensive applications that process a large amount of data, such as precision marketing, e-commerce, and IoV big data analysis.

Available now: M7, aM7, M7n, M6, M3ne, M3, and M2

Table 7-86 Memory-optimized ECS features

Type	Compute	Disk Type	Network
M7	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 128 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 12,000,000 • Maximum intranet bandwidth: 42 Gbit/s

Type	Compute	Disk Type	Network
aM7	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 232 • Basic/Turbo frequency: 2.45GHz/3.5GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 20,000,000 • Maximum intranet bandwidth: 100 Gbit/s
M7n	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,500,000 • Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
M6	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 64 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
M6nl	• vCPU to memory ratio: 1:8 • Number of vCPUs: 4 to 8 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 1,200,000 • Maximum intranet bandwidth: 15 Gbit/s

Type	Compute	Disk Type	Network
M3ne	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
M3	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 60 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 17 Gbit/s
M2	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 32 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.4 GHz/3.3 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 600,000 • Maximum intranet bandwidth: 13 Gbit/s

Memory-optimized M7

Overview

M7 ECSs use the third-generation Intel® Xeon® Scalable processors to provide enhanced computing, security, and stability. Each M7 ECS can have a maximum number of 128 vCPUs and a memory speed of 3,200 MHz. They are suitable for memory-intensive computing applications.

Notes

M7 ECSs can only have SCSI disks attached, and the disks will use WWN identifiers.

Application Scenarios

- Massively parallel processing (MPP) of data warehouse
- MapReduce and Hadoop distributed computing
- Distributed file systems
- Network file system, log, or data processing applications

Specifications

Table 7-87 M7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7.large.8	2	16	4/0.8	40	2	2	QingTian
m7.xlarge.8	4	32	8/1.6	80	2	3	
m7.2xlarge.8	8	64	15/3	150	4	4	
m7.3xlarge.8	12	96	17/5	200	4	6	
m7.4xlarge.8	16	128	20/6	280	8	8	
m7.6xlarge.8	24	192	25/9	400	8	8	
m7.8xlarge.8	32	256	30/12	550	16	8	
m7.12xlarge.8	48	384	35/18	750	16	8	

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7.16xlarge.8	64	512	36/24	1,000	28	8	
m7.24xlarge.8	96	768	40/36	1,100	32	8	
m7.32xlarge.8	128	1024	42/40	1,200	32	8	

aM7

Overview

aM7 ECSs use the latest-generation Intel® Xeon® Scalable processors to provide enhanced computing, security, and stability. An aM7 ECS can have a maximum number of 232 vCPUs and a memory speed of 3,200 MHz. They are suitable for memory-intensive computing applications.

Notes

aM7 ECSs offer an intranet bandwidth of up to 100 Gbit/s and network forwarding capacity of up to 20 million PPS. When the bandwidth is higher than 50 Gbit/s and the network forwarding packets exceed 10 million PPS, you can use DPDK to mask the differences among ECS kernel protocol stacks to get the actual network performance.

Scenarios

- Massively parallel processing (MPP) of data warehouse
- MapReduce and Hadoop distributed computing
- Distributed file systems
- Network file system, log, or data processing applications

Specifications

Table 7-88 aM7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
am7.large.8	2	16	2/1	40	2	2	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
am7.xlarge.8	4	32	3/1.5	60	2	3	
am7.2xlarge.8	8	64	4/2.5	100	4	4	
am7.3xlarge.8	12	96	6/4	150	4	6	
am7.4xlarge.8	16	128	8/5	200	8	8	
am7.6xlarge.8	24	192	12/6	250	8	8	
am7.8xlarge.8	32	256	15/8	300	16	8	
am7.12xlarge.8	48	384	22/12	400	16	8	
am7.16xlarge.8	64	512	28/16	550	24	12	
am7.24xlarge.8	96	768	40/25	800	24	12	
am7.29xlarge.8	116	934	50/30	950	32	16	
am7.32xlarge.8	128	1024	55/35	1,000	32	16	
am7.48xlarge.8	192	1536	100/80	1,600	32	16	
am7.58xlarge.8	232	1868	120/100	2,000	32	16	

Memory-optimized M7n

M7n ECSs use the third-generation Intel® Xeon® Scalable processors to provide enhanced computing, security, and stability. Each M7n ECS can have a maximum number of 96 vCPUs and a memory speed of 3,200 MHz, and provide a secure and trusted cloud environment for memory-intensive computing applications.

Scenarios

- Massively parallel processing (MPP) of data warehouse

- MapReduce and Hadoop distributed computing
- Distributed file systems
- Network file system, log, or data processing applications

Specifications

Table 7-89 M7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m7n.large.8	2	16	4/0.8	40	2	2	KVM
m7n.xlarge.8	4	32	8/1.6	80	2	3	KVM
m7n.2xlarge.8	8	64	15/3	150	4	4	KVM
m7n.3xlarge.8	12	96	17/5	200	4	6	KVM
m7n.4xlarge.8	16	128	20/6	280	8	8	KVM
m7n.6xlarge.8	24	192	25/9	400	8	8	KVM
m7n.8xlarge.8	32	256	30/12	550	16	8	KVM
m7n.12xlarge.8	48	384	35/18	750	16	8	KVM
m7n.16xlarge.8	64	512	36/24	800	28	8	KVM
m7n.24xlarge.8	96	768	40/36	850	32	8	KVM

Memory-optimized M6 ECSs

Overview

M6 ECSs use the second-generation Intel® Xeon® Scalable processors with technologies optimized to offer powerful and stable computing performance. Using 25GE high-speed intelligent NICs, M6 ECSs provide a maximum memory size of 512 GiB based on DDR4 for memory-intensive applications with high requirements on network bandwidth and Packets Per Second (PPS).

Scenarios

- Massively parallel processing (MPP) database
- MapReduce and Hadoop distributed computing
- Distributed file systems
- Network file system, log, or data processing applications

Specifications

Table 7-90 M6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m6.large.8	2	16	4/1.2	40	2	2	KVM
m6.xlarge.8	4	32	8/2.4	80	2	3	KVM
m6.2xlarge.8	8	64	15/4.5	150	4	4	KVM
m6.3xlarge.8	12	96	17/7	200	4	6	KVM
m6.4xlarge.8	16	128	20/9	280	8	8	KVM
m6.6xlarge.8	24	192	25/14	400	8	8	KVM
m6.8xlarge.8	32	256	30/18	550	16	8	KVM
m6.12xlarge.8	48	384	35/27	750	16	8	KVM
m6.16xlarge.8	64	512	40/36	1,000	32	8	KVM
m6.22xlarge.8.physical	88	768	40/40	1,000	16	33	BMS

Memory-optimized M6nl

Overview

M6nl ECSs use the second-generation Intel® Xeon® Scalable processors with technologies optimized to offer powerful and stable computing performance. Using 25GE high-speed intelligent NICs, M6nl ECSs provide a maximum memory

size of 512 GiB based on DDR4 for memory-intensive applications with high requirements on network bandwidth and Packets Per Second (PPS).

Scenarios

- Massively parallel processing (MPP) of data warehouse
- MapReduce and Hadoop distributed computing
- Distributed file systems
- Network file system, log, or data processing applications

Specifications

Table 7-91 M6nl ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
m6nl.xlarge.8	4	32	8/2	64	2	KVM
m6nl.2xlarge.8	8	64	15/4	120	4	KVM

Memory-optimized M3ne ECSs

Overview

M3ne ECSs are suited for large-memory datasets with high network performance requirements. Using Intel® Xeon® Scalable processors and Hi1822 high-speed intelligent NICs, the M3ne ECSs provide a maximum memory size of 512 GiB based on DDR4 for memory-intensive applications with high requirements on network performance.

Scenarios

- High-performance databases
- In-memory databases
- Distributed memory cache
- Data analysis and mining
- Hadoop and Spark clusters and other enterprise applications

Specifications

Table 7-92 M3ne ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
m3ne.large.8	2	16	4/1.3	40	2	2	KVM
m3ne.xlarge.8	4	32	8/2.5	80	2	3	KVM
m3ne.2xlarge.8	8	64	15/5	150	4	4	KVM
m3ne.3xlarge.8	12	96	17/8	200	4	6	KVM
m3ne.4xlarge.8	16	128	20/10	280	8	8	KVM
m3ne.6xlarge.8	24	192	25/16	400	8	8	KVM
m3ne.8xlarge.8	32	256	30/20	550	16	8	KVM
m3ne.15xlarge.8	60	512	40/40	1,000	32	8	KVM

Memory-optimized M3 ECSs

Overview

M3 ECSs are developed based on the KVM virtualization platform and designed for processing large-scale data sets in the memory. They use Intel® Xeon® Scalable processors, network acceleration engines, and DPDK rapid packet processing mechanism to provide higher network performance, providing a maximum memory size of 512 GiB based on DDR4 for high-memory computing applications.

Notes

- M3 ECSs do not have InfiniBand or SSDs configured.
- M3 ECSs support specifications modification if the source and target ECSs are of the same type.

Scenarios

- High-performance databases
- In-memory databases
- Distributed memory cache
- Data analysis and mining

- Hadoop and Spark clusters and other enterprise applications

Specifications

Table 7-93 M3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
m3.large.8	2	16	1.5/0.6	30	2	KVM
m3.xlarge.8	4	32	3/1.1	50	2	KVM
m3.2xlarge.8	8	64	5/2	90	4	KVM
m3.3xlarge.8	12	96	8/3.5	110	4	KVM
m3.4xlarge.8	16	128	10/4.5	130	4	KVM
m3.6xlarge.8	24	192	12/6.5	200	8	KVM
m3.8xlarge.8	32	256	15/9	260	8	KVM
m3.15xlarge.8	60	512	17/17	500	16	KVM

Memory-optimized M2 ECS

Overview

M2 ECSs use Intel Xeon E5-2690 v4 CPUs and are designed for memory-optimized applications.

Notes

To improve network performance, you can set the NIC MTU of an M2 ECS to **8888**.

Scenarios

- High-performance databases
- In-memory databases
- Distributed memory cache
- Data analysis and mining
- Hadoop and Spark clusters and other enterprise applications

Specifications

Table 7-94 M2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
m2.large.8	2	16	1.5/0.5	10	1	KVM
m2.xlarge.8	4	32	3/1	15	1	KVM
m2.2xlarge.8	8	64	5/2	30	2	KVM
m2.4xlarge.8	16	128	8/4	40	4	KVM
m2.8xlarge.8	32	256	13/8	60	8	KVM

7.6 Large-Memory ECSs

Overview

Large-memory ECSs provide an even larger amount of memory than memory-optimized ECSs. They are used for applications that require a large amount of memory, rapid data switching, low latency, and capability of processing large volumes of data. Large-memory ECSs provide large memory and high computing, storage, and network performance.

Available now: E7, E6, and E3

Table 7-95 Large-memory ECS features

Type	Compute	Disk Type	Network
E7	• vCPU to memory ratio: 1:20or 1:21 • Number of vCPUs: 48 to 384 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency (vCPU to memory ratio: 1:20): 2.6 GHz/3.5 GHz • Basic/Turbo frequency (vCPU to memory ratio: 1:21): 2.1 GHz/3.8 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 30 million PPS • Maximum intranet bandwidth: 100 Gbit/s
E6	• vCPU to memory ratio: 1:28 • Number of vCPUs: 104 to 208 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.7 GHz/4.0 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s
E3	• vCPU to memory ratio: 1:12, 1:14, or 1:20 • Number of vCPUs: 28 to 208 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency (vCPU to memory ratio: 1:12): 3.0 GHz/3.4 GHz • Basic/Turbo frequency (vCPU to memory ratio: 1:14 or 1:20): 2.1 GHz/3.8 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 10,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Large-memory E7

Overview

Large-memory E7 ECSs use 3rd generation Intel® Xeon® Scalable processors to provide powerful and stable computing performance. By using 25GE high-speed intelligent NICs, E7 ECSs offer ultra-high network bandwidth and PPS.

Notes

For notes about using E7 ECSs, see **Notes**.

Scenarios

- Online transaction processing (OLTP) and online analytical processing (OLAP) scenarios
- SAP HANA in-memory databases, such as SAP Business Suite on HANA (SoH), SAP S/4HANA (S4H), SAP Business Warehouse on HANA (BWoH), and SAP BW/4HANA (B4H)
- High-performance databases
- Distributed cache
- Big data processing engines and data mining applications

Specifications

Table 7-96 E7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Virtualization
e7.12xlarge.20	48	960	30/20	550	16	8	1024	KVM
e7.24xlarge.20	96	1920	44/40	1000	32	8	2048	KVM
e7.48xlarge.21	192	4032	50/40	1500	16	8	1024	KVM
e7.96xlarge.21	384	8064	100/90	3000	32	8	2048	KVM

Large-memory E6

Overview

E6 ECSs use second-generation Intel® Xeon® Scalable processors to provide powerful and stable computing performance. By using 25GE high-speed intelligent NICs, E6 ECSs offer ultra-high network bandwidth and PPS. They also provide up to 5,896 GiB of memory size for large memory intensive applications.

Notes

For notes about using E6 ECSs, see **Notes**.

Application Scenarios

- OLTP and OLAP scenarios
- SAP HANA in-memory databases, such as SAP Business Suite on HANA (SoH), SAP S/4HANA (S4H), SAP Business Warehouse on HANA (BWoH), and SAP BW/4HANA (B4H)
- High-performance databases
- Distributed cache
- Big data processing engines and data mining applications

Specifications

Table 7-97 E6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
e6.26xlarge.28	104	2948	30/20	550	16	8	KVM
e6.52xlarge.28	208	5896	40/40	1,000	32	8	KVM

Large-Memory E3 ECSs

Overview

Large-memory E3 ECSs use Intel® Xeon® Scalable processors to provide powerful and stable computing performance. By using 25GE high-speed intelligent NICs, E3 ECSs offer ultra-high network bandwidth and PPS.

Notes

For notes about using E3 ECSs, see **Notes**.

Scenarios

- OLTP and OLAP scenarios
- SAP HANA in-memory databases, such as SAP Business Suite on HANA (SoH), SAP S/4HANA (S4H), SAP Business Warehouse on HANA (BWoH), and SAP BW/4HANA (B4H)
- High-performance databases
- Distributed cache
- Big data processing engines and data mining applications

Specifications

Table 7-98 E3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
e3.7xlarge.12	28	348	25/12	280	8	8	KVM
e3.14xlarge.12	56	696	25/25	550	16	8	KVM
e3.26xlarge.14	104	1466	30/20	550	16	8	KVM
e3.52xlarge.14	208	2932	40/40	1,000	32	8	KVM
e3.52xlarge.20	208	4096	40/40	1,000	32	8	KVM

Notes

- Large-memory ECSs do not support NIC hot swapping.
- Affected by the memory loading speed, large-memory ECSs may take longer to start.
- The primary and extension NICs of a large-memory ECS can only be used in the scenarios listed in **Table 7-99**.

  Table 7-99 Application scenarios of the NICs of a large-memory ECS

NIC Type	Application Scenario	Remarks
Primary NIC	Vertical layer 3 communication	N/A
Extension NIC	Horizontal layer 2 communication	To improve network performance, you can set the MTU of an extension NIC to **8888**.

- An ECS can have a maximum of 60 attached disks, including the system disk. For details about constraints, see **Can I Attach Multiple Disks to an ECS?**

  For example, an E3 ECS can have one system disk and 59 EVS disks.

  NOTE

  An existing large-memory ECS can have a maximum of 40 attached disks (including the system disk). To attach 60 disks, enable advanced disk. For details, see **Enabling Advanced Disk**.

7.7 Disk-intensive ECSs

Overview

Disk-intensive ECSs are delivered with local disks for high storage bandwidth and IOPS. In addition, local disks are more cost-effective in massive data storage scenarios. Disk-intensive ECSs have the following features:

- They use local disks to provide high sequential read/write performance and low latency, improving file read/write performance.
- They provide powerful and stable computing capabilities, ensuring efficient data processing.
- They provide high intranet performance, including robust intranet bandwidth and packets per second (PPS), for data exchange between ECSs during peak hours.

Available flavors

Available now: D6, D7, D3, and D2

Table 7-100 Disk-intensive ECS features

Type	Compute	Disk Type	Network
D7	• vCPU to memory ratio: 1:4 • Number of vCPUs: 4 to 72 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Support for IPv6 • Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 9,000,000 Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
D6	• vCPU to memory ratio: 1:4 • Number of vCPUs: 4 to 72 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 9,000,000 • Maximum intranet bandwidth: 44 Gbit/s
D3	• vCPU to memory ratio: 1:8 or 1:10 • Number of vCPUs: 4 to 56 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 40 Gbit/s
D2	• vCPU to memory ratio: 1:8 • Number of vCPUs: 4 to 48 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 900,000 • Maximum intranet bandwidth: 13 Gbit/s

Disk-intensive D7

Overview

D7 ECSs, with a vCPU/memory ratio of 1:4, use 3rd Generation Intel® Xeon® Scalable processors to offer powerful and stable computing performance. Equipped with 25GE high-speed intelligent NICs and local SATA disks, D7 ECSs offer ultra-high network bandwidth, PPS, and local storage. The capacity of a single SATA disk is up to 3,600 GiB, and an ECS can have up to 32 such disks attached.

Notes

For details, see **Notes on Using D7 ECSs**.

Scenarios

Disk-intensive D7 ECSs are suitable for applications that need to process large volumes of data and require high I/O performance and rapid data switching and processing, including massively parallel processing (MPP) databases, MapReduce and Hadoop distributed computing, big data computing, distributed file systems, network file systems, and logs and data processing applications.

Specifications

Table 7-101 D7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
d7.xlarge.4	4	16	5/1.7	60	2	3	32	2 × 3,600	KVM
d7.2xlarge.4	8	32	10/3.5	120	4	4	64	4 × 3,600	KVM
d7.4xlarge.4	16	64	20/6.7	240	4	6	96	8 × 3,600	KVM
d7.6xlarge.4	24	96	25/10	350	8	8	128	12 × 3,600	KVM
d7.8xlarge.4	32	128	30/13.5	450	8	8	192	16 × 3,600	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
d7.12xlarge.4	48	192	40/20	650	16	8	256	24 × 3,600	KVM
d7.16xlarge.4	64	256	42/27	850	16	8	256	32 × 3,600	KVM

Disk-intensive D6

Overview

D6 ECSs, with a vCPU/memory ratio of 1:4, use 2nd Generation Intel® Xeon® Scalable processors to offer powerful and stable computing performance. Equipped with 25GE high-speed intelligent NICs and local SATA disks, D6 ECSs offer ultra-high network bandwidth, PPS, and local storage. The capacity of a single SATA disk is up to 3600 GiB, and an ECS can have up to 36 such disks attached.

Notes

For details, see **Notes on Using D6 ECSs**.

Scenarios

Disk-intensive D6 ECSs are suitable for applications that need to process large volumes of data and require high I/O performance and rapid data switching and processing, including massively parallel processing (MPP) databases, MapReduce and Hadoop distributed computing, and big data computing, distributed file systems, network file systems, and logs and data processing applications.

Specifications

Table 7-102 D6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
d6.xlarge.4	4	16	5/2	60	2	3	2 × 3,600	KVM
d6.2xlarge.4	8	32	10/4	120	4	4	4 × 3,600	KVM
d6.4xlarge.4	16	64	20/7.5	240	8	8	8 × 3,600	KVM
d6.6xlarge.4	24	96	25/11	350	8	8	12 × 3,600	KVM
d6.8xlarge.4	32	128	30/15	450	16	8	16 × 3,600	KVM
d6.12xlarge.4	48	192	40/22	650	16	8	24 × 3,600	KVM
d6.16xlarge.4	64	256	42/30	850	32	8	32 × 3,600	KVM
d6.18xlarge.4	72	288	44/34	900	32	8	36 × 3,600	KVM

Disk-intensive D3

Overview

D3 ECSs use Intel® Xeon® Scalable processors to offer powerful and stable computing performance. Equipped with proprietary 25GE high-speed intelligent NICs and local SAS disks, D3 ECSs offer ultra-high network bandwidth, PPS, and local storage.

Notes

For details, see **Notes on Using D3 ECSs**.

Scenarios

Disk-intensive D3 ECSs are suitable for applications that need to process large volumes of data and require high I/O performance and rapid data switching and

processing, including massively parallel processing (MPP) databases, MapReduce and Hadoop distributed computing, big data computing, distributed file systems, network file systems, and logs and data processing applications.

Specifications

Table 7-103 D3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
d3.xlarge.8	4	32	2.5/2.5	50	2	3	2 × 1,675	KVM
d3.2xlarge.8	8	64	5/5	100	2	4	4 × 1,675	KVM
d3.4xlarge.8	16	128	10/10	120	4	8	8 × 1,675	KVM
d3.6xlarge.8	24	192	15/15	160	6	8	12 × 1,675	KVM
d3.8xlarge.8	32	256	20/20	200	8	8	16 × 1,675	KVM
d3.12xlarge.8	48	384	32/32	220	16	8	24 × 1,675	KVM
d3.14xlarge.10	56	560	40/40	500	16	8	28 × 1,675	KVM

Disk-intensive D2

Overview

D2 ECSs are KVM-based. They use local storage for high storage performance and intranet bandwidth.

Notes

For details, see **Notes on Using D2 ECSs**.

Scenarios

Disk-intensive D2 ECSs are suitable for applications that need to process large volumes of data and require high I/O performance and rapid data switching and processing, including massively parallel processing (MPP) databases, MapReduce and Hadoop distributed computing, big data computing, distributed file systems, network file systems, and logs and data processing applications.

Specifications

Table 7-104 D2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Virtualization
d2.xlarge.8	4	32	3/1	15	2	2 × 1,675	KVM
d2.2xlarge.8	8	64	5/2	30	2	4 × 1,675	KVM
d2.4xlarge.8	16	128	8/4	40	4	8 × 1,675	KVM
d2.6xlarge.8	24	192	10/6	50	6	12 × 1,675	KVM
d2.8xlarge.8	32	256	13/8	60	8	16 × 1,675	KVM
d2.12xlarge.8	48	384	13/13	90	8	24 × 1,675	KVM

Performance of a Single SATA HDD Disk Attached to a D7 ECS

Table 7-105 Performance of a single SATA HDD disk attached to a D7 ECS

Metric	Performance
Disk capacity	3,600 GiB
Maximum throughput	210 MBps
Access latency	Millisecond-level

Performance of a Single SATA HDD Disk Attached to a D6 ECS

Table 7-106 Performance of a single SATA HDD disk attached to a D6 ECS

Metric	Performance
Disk capacity	3,600 GiB
Maximum throughput	198 Mbit/s
Access latency	Millisecond-level

Performance of a Single SAS HDD Disk Attached to a D3 ECS

Table 7-107 Performance of a single SAS HDD disk attached to a D3 ECS

Metric	Performance
Disk capacity	1,675 GiB
Maximum throughput	247 Mbit/s
Access latency	Millisecond-level

Performance of a Single SAS HDD Disk Attached to a D2 ECS

Table 7-108 Performance of a single SAS HDD disk attached to a D2 ECS

Metric	Performance
Disk capacity	1,675 GiB
Maximum throughput	230 MB/s
Access latency	Millisecond-level

Notes on Using D7 ECSs

- Currently, the following operating systems are supported (subject to the information displayed on the console):
  - CentOS 6.3/6.4/6.5/6.6/6.7/6.8/6.9/6.10/7.0/7.1/7.2/7.3/7.4/7.5/7.6/8.0 64bit
  - SUSE Enterprise Linux Server 11 SP3/SP4 64bit
  - SUSE Enterprise Linux Server 12 SP1/SP2/SP3/SP4 64bit
  - Red Hat Enterprise Linux 6.4/6.5/6.6/6.7/6.8/6.9/6.10/7.0/7.1/7.2/7.3/7.4/7.5/7.6/8.0 64bit
  - Windows Server 2008 R2 Enterprise 64bit

  - Windows Server 2012 R2 Standard 64bit
  - Windows Server 2016 Standard 64bit
  - Debian 8.1.0/8.2.0/8.4.0/8.5.0/8.6.0/8.7.0/8.8.0/9.0.0 64bit
  - EulerOS 2.2/2.3/2.5 64bit
  - Fedora 22/23/24/25/26/27/28 64bit
  - OpenSUSE 13.2/15.0/15.1/42.2/42.3 64bit
- If the host where a D7 ECS is deployed is faulty, the ECS cannot be restored through live migration.
  - If the host is faulty or subhealthy and needs to be repaired, you need to stop the ECS.
  - In case of system maintenance or hardware faults, the ECS will be redeployed (to ensure HA) and cold migrated to another host. The local disk data of the ECS will not be retained.
- Specifications cannot be changed.
- D7 ECSs do not support local disk snapshots or backups.
- D7 ECSs can use both local disks and EVS disks to store data. In addition, they can have EVS disks attached to provide a larger storage size. Note the following when using the two types of storage media (local disks and EVS disks):
  - Only an EVS disk can be used as the system disk of a D7 ECS.
  - Both EVS disks and local disks can be used as data disks of a D7 ECS.
  - A maximum of 24 disks (including VBD and local disks) can be attached to a D7 ECS. Among the 24 disks, the maximum number of VBD disks (including the system disk) is 24. For details, see **Can I Attach Multiple Disks to an ECS?**

    NOTE

    The maximum number of disks attached to an existing D7 ECS remains unchanged.
- Modify the **fstab** file to set automatic disk mounting at ECS start. For details, see **Setting Automatic Mounting at System Start**.
- The local disk data of a D7 ECS may be lost if an exception occurs, such as physical server breakdown or local disk damage. If your application does not use the data reliability architecture, it is a good practice to use EVS disks to build your ECS.
- When a D7 ECS is deleted, its local disk data will also be automatically deleted, which can take some time. As a result, a D7 ECS takes a longer time than other ECSs to be deleted. Back up the data before deleting such an ECS.
- Do not store service data in local disks for a long time. Instead, store it in EVS disks. To improve data security, use a high availability architecture and back up data in a timely manner.
- Local disks can only be purchased during ECS creation. They cannot be separately purchased after the ECS has been created. The quantity and capacity of your local disks are determined according to the specifications of your ECS.

Notes on Using D6 ECSs

- Currently, the following operating systems are supported (subject to the information displayed on the console):
  - CentOS 6.3/6.4/6.5/6.6/6.7/6.8/6.9/6.10/7.0/7.1/7.2/7.3/7.4/7.5/7.6/8.0 64bit
  - SUSE Enterprise Linux Server 11 SP3/SP4 64bit
  - SUSE Enterprise Linux Server 12 SP1/SP2/SP3/SP4 64bit
  - Red Hat Enterprise Linux 6.4/6.5/6.6/6.7/6.8/6.9/6.10/7.0/7.1/7.2/7.3/7.4/7.5/7.6/8.0 64bit
  - Windows Server 2008 R2 Enterprise 64bit
  - Windows Server 2012 R2 Standard 64bit
  - Windows Server 2016 Standard 64bit
  - Debian 8.1.0/8.2.0/8.4.0/8.5.0/8.6.0/8.7.0/8.8.0/9.0.0 64bit
  - EulerOS 2.2/2.3/2.5/2.9 64bit
  - Fedora 22/23/24/25/26/27/28 64bit
  - OpenSUSE 13.2/15.0/15.1/42.2/42.3 64bit
- If the host where a D6 ECS is deployed is faulty, the ECS cannot be restored through live migration.
  - If the host is faulty or subhealthy and needs to be repaired, you need to stop the ECS.
  - In case of system maintenance or hardware faults, the ECS will be redeployed (to ensure HA) and cold migrated to another host. The local disk data of the ECS will not be retained.
- D6 ECSs do not support specifications modification.
- D6 ECSs do not support local disk snapshots or backups.
- D6 ECSs can use both local disks and EVS disks to store data. Restrictions on using the two types of storage media are as follows:
  - Only an EVS disk can be used as the system disk of a D6 ECS.
  - Both EVS disks and local disks can be used as data disks of a D6 ECS.
  - A maximum of 60 disks (including VBD, SCSI, and local disks) can be attached to a D6 ECS. Among the 60 disks, the maximum number of SCSI disks is 30, and the VBD disks (including the system disk) is 24. For details, see **Can I Attach Multiple Disks to an ECS?**

    NOTE

    The maximum number of disks attached to an existing D6 ECS remains unchanged.
- You can modify the **fstab** file to set automatic disk mounting at ECS start. For details, see **Configuring Automatic Mounting at System Start**.
- The local disk data of a D6 ECS may be lost if an exception occurs, such as physical server breakdown or local disk damage. If your application does not use the data reliability architecture, it is a good practice to use EVS disks to build your ECS.
- When a D6 ECS is deleted, its local disk data will also be automatically deleted, which can take some time. As a result, a D6 ECS takes a longer time than other ECSs to be deleted. Back up the data before deleting such an ECS.

- Do not store service data in local disks for a long time. Instead, store it in EVS disks. To improve data security, use a high availability architecture and back up data in a timely manner.
- Local disks can only be purchased during ECS creation. They cannot be separately purchased after the ECS has been created. The quantity and capacity of your local disks are determined according to the specifications of your ECS.

Notes on Using D3 ECSs

- Currently, the following operating systems are supported (subject to the information displayed on the console):
  - CentOS 6.3/6.4/6.5/6.6/6.7/6.8/6.9/6.10/7.0/7.1/7.2/7.3/7.4/7.5/7.6/8.0 64bit
  - Red Hat Enterprise Linux 6.4/6.5/6.6/6.7/6.8/6.9/6.10/7.0/7.1/7.2/7.3/7.4/7.5/7.6/8.0 64bit
  - Windows Server 2008 R2 Enterprise 64bit
  - Windows Server 2012 R2 Standard 64bit
  - Windows Server 2016 Standard 64bit
  - SUSE Enterprise Linux Server 11 SP3/SP4 64bit
  - SUSE Enterprise Linux Server 12 SP1/SP2/SP3/SP4 64bit
  - Debian 8.1.0/8.2.0/8.4.0/8.5.0/8.6.0/8.7.0/8.8.0/9.0.0 64bit
  - EulerOS 2.2/2.3/2.5 64bit
  - EulerOS 2.5 64bit
  - Fedora 22/23/24/25/26/27/28 64bit
  - OpenSUSE 13.2/15.0/15.1/42.2/42.3 64bit
- If the host where a D3 ECS resides becomes faulty, the ECS cannot be restored through live migration.
  - If the host is faulty or subhealthy, you need to stop the ECS for hardware repair.
  - In case of system maintenance or hardware faults, the ECS will be redeployed (to ensure HA) and cold migrated to another host. The local disk data of the ECS will not be retained.
- D3 ECSs do not support specifications modification.
- D3 ECSs do not support local disk snapshots or backups.
- D3 ECSs can use both local disks and EVS disks to store data. In addition, they can have EVS disks attached to provide a larger storage size. Use restrictions on the two types of storage media are as follows:
  - Only an EVS disk, not a local disk, can be used as the system disk of a D3 ECS.
  - Both EVS disks and local disks can be used as data disks of a D3 ECS.
  - A maximum of 60 disks (including VBD, SCSI, and local disks) can be attached to a D3 ECS. Among the 60 disks, the maximum number of SCSI disks is 30, and the VBD disks (including the system disk) is 24. For details, see **Can I Attach Multiple Disks to an ECS?**

NOTE

The maximum number of disks attached to an existing D3 ECS remains unchanged.

- You can modify the **fstab** file to set automatic disk mounting at ECS start. For details, see **Setting Automatic Mounting at System Start**.
- The local disk data of a D3 ECS may be lost if an exception occurs, such as physical server breakdown or local disk damage. If your application does not use the data reliability architecture, it is a good practice to use EVS disks to build your ECS.
- When a D3 ECS is deleted, its local disk data will also be automatically deleted, which can take some time. As a result, a D3 ECS takes a longer time than other ECSs to be deleted. Back up the data before deleting such an ECS.
- Do not store service data in local disks for a long time. Instead, store it in EVS disks. To improve data security, use a high availability architecture and back up data in a timely manner.
- Local disks can only be purchased during ECS creation. The quantity and capacity of your local disks are determined according to the specifications of your ECS.

Notes on Using D2 ECSs

- Currently, the following operating systems are supported (subject to the information displayed on the console):
  - CentOS 6.7/6.8/7.2/7.3/7.4 64bit
  - SUSE Enterprise Linux Server 11 SP3/SP4 64bit
  - SUSE Enterprise Linux Server 12 SP1/SP2 64bit
  - Red Hat Enterprise Linux 6.8/7.3 64bit
  - Windows Server 2008 R2 Enterprise 64bit
  - Windows Server 2012 R2 Standard 64bit
  - Windows Server 2016 Standard 64bit
  - Debian 8.7/9.0.0 64bit
  - EulerOS 2.2 64bit
  - Fedora 25/26 64bit
  - OpenSUSE 42.2/42.3 64bit
- If the host where a D2 ECS resides becomes faulty, the ECS cannot be restored through live migration.
  - If the host is faulty or subhealthy, you need to stop the ECS for hardware repair.
  - In case of system maintenance or hardware faults, the ECS will be redeployed (to ensure HA) and cold migrated to another host. The local disk data of the ECS will not be retained.
- To improve network performance, you can set the NIC MTU of a D2 ECS to **8888**.
- D2 ECSs do not support specifications modification.
- D2 ECSs do not support local disk snapshots or backups.

- D2 ECSs do not support automatic recovery.
- D2 ECSs can use both local disks and EVS disks to store data. In addition, they can have EVS disks attached to provide a larger storage size. Use restrictions on the two types of storage media are as follows:
  - Only an EVS disk, not a local disk, can be used as the system disk of a D2 ECS.
  - Both EVS disks and local disks can be used as data disks of a D2 ECS.
  - A D2 ECS can have a maximum of 60 attached disks (including VBD, SCSI, and local disks). Among the 60 disks, the maximum number of SCSI disks is 30, and the maximum number of VBD disks is 24 (including the system disk). For details about constraints, see **Can I Attach Multiple Disks to an ECS?**
- You can modify the **fstab** file to set automatic disk mounting at ECS start. For details, see **Setting Automatic Mounting at System Start**.
- The basic resources, including vCPUs, memory, and image of a stopped D2 ECS will continue to be billed. To stop the ECS from being billed, delete it and its associated resources.
- The local disk data of a D2 ECS may be lost if an exception occurs, such as physical server breakdown or local disk damage. If your application does not use the data reliability architecture, it is a good practice to use EVS disks to build your ECS.
- When a D2 ECS is deleted, its local disk data will also be automatically deleted, which can take some time. As a result, a D2 ECS takes a longer time than other ECSs to be deleted. Back up the data before deleting such an ECS.
- Do not store service data in local disks for a long time. Instead, store it in EVS disks. To improve data security, use a high availability architecture and back up data in a timely manner.
- Local disks can only be purchased during ECS creation. The quantity and capacity of your local disks are determined according to the specifications of your ECS.

Handling Damaged Local Disks Attached to an ECS of D Series

If a local disk attached to an ECS is damaged, perform the following operations to handle this issue:

For a Linux ECS:

1. Detach the faulty local disk.
   a. Run the following command to query the mount point of the faulty disk:
      df –Th

      Figure 7-1 Querying the mount point

```
[root@e                ~]# df -Th
Filesystem     Type      Size  Used Avail Use% Mounted on
devtmpfs       devtmpfs  4.0M     0  4.0M   0% /dev
tmpfs          tmpfs      16G     0   16G   0% /dev/shm
tmpfs          tmpfs      16G  8.6M   16G   1% /run
tmpfs          tmpfs     4.0M     0  4.0M   0% /sys/fs/cgroup
/dev/vda1      ext4       40G  2.1G   36G   6% /
tmpfs          tmpfs      16G   32K   16G   1% /tmp
/dev/sda1      ext4      1.7T   28K  1.6T   1% /mnt/sda1
```


b. Run the following command to detach the faulty local disk:

umount *Mount point*

In the example shown in **Figure 7-1**, the mount point of **/dev/sda1** is **/mnt/sda1**. Run the following command:

umount /mnt/sda1

2. Check whether the mount point of the faulty disk is configured in **/etc/fstab** of the ECS. If yes, comment out the mount point to prevent the ECS from entering the maintenance mode upon ECS startup after the faulty disk is replaced.

a. Run the following command to obtain the partition UUID:

blkid *Disk partition*

In this example, run the following command to obtain the UUID of the **/dev/sda1** partition:

blkid /dev/sda1

Information similar to the following is displayed:

```
/dev/sda1: UUID="b9a07b7b-9322-4e05-ab9b-14b8050cd8cc" TYPE="ext4"
```

b. Run the following command to check whether **/etc/fstab** contains the automatic mounting information about the disk partition:

cat /etc/fstab

Information similar to the following is displayed:

```
UUID=b9a07b7b-9322-4e05-ab9b-14b8050cd8cc    /mnt    ext4    defaults        0 0
```

c. If the mounting information exists, perform the following steps to delete it.

i. Run the following command to edit **/etc/fstab**:

vi /etc/fstab

Use the UUID obtained in **2.a** to check whether the mounting information of the local disk is contained in **/etc/fstab**. If yes, comment out the information. This prevents the ECS from entering the maintenance mode upon ECS startup after the local disk is replaced.

ii. Press **i** to enter editing mode.

iii. Delete or comment out the automatic mounting information of the disk partition.

For example, add a pound sign (#) at the beginning of the following command line to comment out the automatic mounting information:

```
# UUID=b9a07b7b-9322-4e05-ab9b-14b8050cd8cc    /mnt    ext4    defaults        0 0
```

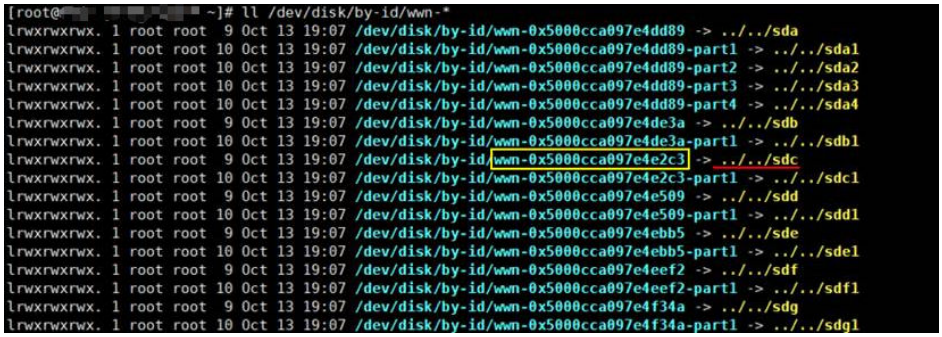
iv. Press **Esc** to exit editing mode. Enter **:wq** and press **Enter** to save the settings and exit.

3. Run the following command to obtain the WWN of the local disk:

For example, if the sdc disk is faulty, obtain the WWN of the sdc disk.

ll /dev/disk/by-id/ | grep wwn-

Figure 7-2 Querying the WWN of the faulty local disk



4. Stop the ECS and provide the WWN of the faulty disk to technical support personnel to replace the local disk.

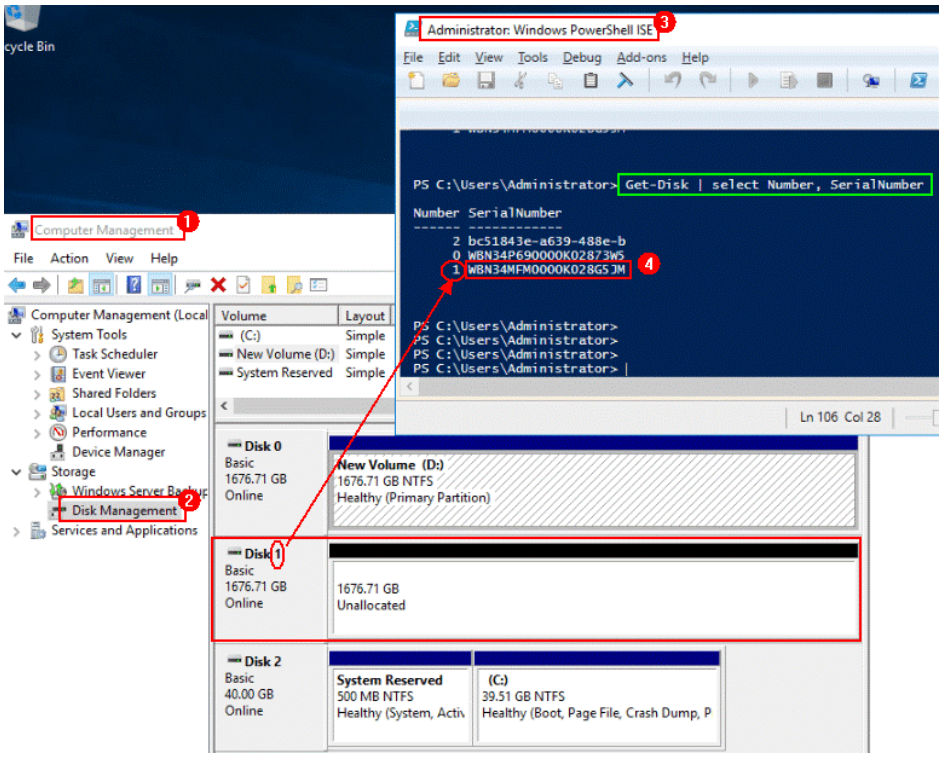
   After the local disk is replaced, restart the ECS to synchronize the new local disk information to the virtualization layer.

For a Windows ECS:

1. Open **Computer Management**, choose **Computer Management (Local)** > **Storage** > **Disk Management**, and view the disk ID, for example, Disk 1.
2. Open **Windows PowerShell** as an administrator and obtain the serial number of the faulty disk according to the mapping between the disk ID and serial number.

   Get-Disk | select Number, SerialNumber

Figure 7-3 Querying the mapping between the disk ID and serial number



NOTE

If the serial number cannot be obtained by running the preceding command, see **Using a Serial Number to Obtain the Disk Name (Windows)**.

3. Stop the ECS and provide the serial number of the faulty disk to technical support personnel to replace the local disk.

   After the local disk is replaced, restart the ECS to synchronize the new local disk information to the virtualization layer.

7.8 Ultra-high I/O ECSs

Overview

Ultra-high I/O ECSs use high-performance local NVMe SSDs to provide high storage input/output operations per second (IOPS) and low read/write latency. You can create such ECSs on the management console.

Available now: D7i, Ir7, I7, aI7, I7n, Ir7n, Ir3, and I3

Table 7-109 Ultra-high I/O ECS features

Type	Compute	Disk Type	Network
D7i	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • Higher ECS specifications, better network performance • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 44 Gbit/s

Type	Compute	Disk Type	Network
Ir7	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 64 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 6,000,000 • Maximum intranet bandwidth: 40 Gbit/s
I7	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 40 Gbit/s
aI7	• vCPU to memory ratio: 1:8 • Number of vCPUs: 8 to 96 • Basic/Turbo frequency: 2.45GHz/3.5GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 40 Gbit/s

Type	Compute	Disk Type	Network
Ir7n	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 64 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 6,000,000 • Maximum intranet bandwidth: 40 Gbit/s
I7n	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 96 • 3rd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 8,000,000 • Maximum intranet bandwidth: 40 Gbit/s
Ir3	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 32 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,500,000 • Maximum intranet bandwidth: 30 Gbit/s

Type	Compute	Disk Type	Network
I3	• vCPU to memory ratio: 1:8 • Number of vCPUs: 8 to 64 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.0 GHz/3.4 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 5,000,000 • Maximum intranet bandwidth: 25 Gbit/s

Ultra-high I/O D7i

Overview

Each D7i ECS uses the third-generation Intel® Xeon® Scalable processor and large-capacity high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB)
- ElasticSearch

Specifications

Table 7-110 D7i ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
d7i.2xlarge.4	8	32	10/3	120	4	4	64	1 × 15360GiB NVMe	KVM
d7i.4xlarge.4	16	64	15/6	200	4	6	96	2 × 15360GiB NVMe	KVM
d7i.8xlarge.4	32	128	25/12	400	8	8	192	4 × 15360GiB NVMe	KVM
d7i.12xlarge.4	48	192	30/18	500	16	8	256	6 × 15360GiB NVMe	KVM
d7i.16xlarge.4	64	256	35/24	600	16	8	256	8 × 15360GiB NVMe	KVM
d7i.24xlarge.4	96	384	44/36	800	32	8	256	12 × 15360GiB NVMe	KVM

Ultra-high I/O Ir7

Overview

Each Ir7 ECS uses the third-generation Intel® Xeon® Scalable processor and two small-capacity high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB)
- ElasticSearch

Specifications

Table 7-111 Ir7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Local Disks (GiB)	Virtualization
ir7.large.4	2	8	3/0.8	40	2	3	2 × 50	KVM
ir7.xlarge.4	4	16	6/1.5	80	2	3	2 × 100	KVM
ir7.2xlarge.4	8	32	15/3.1	150	4	4	2 × 200	KVM
ir7.4xlarge.4	16	64	20/6.2	300	4	6	2 × 400	KVM
ir7.8xlarge.4	32	128	30/12	400	8	8	2 × 800	KVM
ir7.16xlarge.4	64	256	40/25	600	16	8	2 × 1,600	KVM

Ultra-high I/O I7

Overview

Each I7 ECS uses the third-generation Intel® Xeon® Scalable processor and large-capacity high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB) and ElasticSearch

Specifications

Table 7-112 I7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7.2xlarge.4	8	32	10/3	120	4	4	64	1 × 1,600 GiB NVMe	KVM
i7.4xlarge.4	16	64	15/6	200	4	6	96	2 × 1,600 GiB NVMe	KVM
i7.8xlarge.4	32	128	25/12	400	8	8	192	4 × 1,600 GiB NVMe	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7.12xlarge.4	48	192	30/18	500	16	8	256	6 × 1,600 GiB NVMe	KVM
i7.16xlarge.4	64	256	35/24	600	16	8	256	8 × 1,600 GiB NVMe	KVM
i7.24xlarge.4	96	384	44/36	800	32	8	256	12 × 1,600 GiB NVMe	KVM

aI7

Overview

aI7 ECSs use the next-generation scalable processor and large-capacity high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB) and ElasticSearch

Specifications

Table 7-113 aI7 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
ai7.2xlarge.8	8	64	4/2.5	100	8	8	64	1 × 1,600 GiB NVMe	KVM
ai7.4xlarge.8	16	128	8/5	200	16	8	128	2 × 1,600 GiB NVMe	KVM
ai7.8xlarge.8	32	256	15/8	300	16	8	256	4 × 1,600 GiB NVMe	KVM
ai7.12xlarge.8	48	384	22/12	400	16	8	256	6 × 1,600 GiB NVMe	KVM
ai7.16xlarge.8	64	512	28/16	550	24	12	256	8 × 1,600 GiB NVMe	KVM
ai7.24xlarge.8	96	768	40/25	800	24	12	256	12 × 1,600 GiB NVMe	KVM

Ultra-high I/O Ir7n

Overview

Ir7n ECSs use the 3rd Generation Intel® Xeon® Scalable processors to offer powerful and stable computing performance, 25GE high-speed intelligent NICs to support ultra-high network bandwidth and PPS, and high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB)
- ElasticSearch

Specifications

Table 7-114 Ir7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
ir7n.large.4	2	8	3/0.9	40	2	3	32	2 × 50	KVM
ir7n.xlarge.4	4	16	6/1.8	80	2	3	32	2 × 100	KVM
ir7n.2xlarge.4	8	32	15/3.6	150	4	4	64	2 × 200	KVM
ir7n.4xlarge.4	16	64	20/7.3	300	4	6	96	2 × 400	KVM
ir7n.8xlarge.4	32	128	30/14.5	400	8	8	192	2 × 800	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
ir7n.16xlarge.4	64	256	40/29	600	16	8	256	2 × 1,600	KVM

Ultra-high I/O I7n

Overview

I7n ECSs use 3rd Intel® Xeon® Scalable processors and high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB) and ElasticSearch

Specifications

Table 7-115 I7n ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7n.2xlarge.4	8	32	10/3.4	120	4	4	64	1 × 1,600 GiB NVMe	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Max. Supplementary NICs	Local Disks (GiB)	Virtualization
i7n.4xlarge.4	16	64	15/6.7	200	4	6	96	2 × 1,600 GiB NVMe	KVM
i7n.8xlarge.4	32	128	25/13.5	400	8	8	192	4 × 1,600 GiB NVMe	KVM
i7n.12xlarge.4	48	192	30/20	500	16	8	256	6 × 1,600 GiB NVMe	KVM
i7n.16xlarge.4	64	256	35/27	600	16	8	256	8 × 1,600 GiB NVMe	KVM
i7n.24xlarge.4	96	420	44/20	800	32	8	256	12 × 1,600 GiB NVMe	KVM

Ultra-high I/O Ir3 ECS

Overview

Ir3 ECSs use 2nd Generation Intel® Xeon® Scalable processors to offer powerful and stable computing performance, 25GE high-speed intelligent NICs to support

ultra-high network bandwidth and PPS, and high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB)
- ElasticSearch

Specifications

Table 7-116 Ir3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Max. NICs	Virtualization
ir3.large.4	2	8	4/1.2	40	2	2 × 50	2	KVM
ir3.xlarge.4	4	16	8/2.4	80	2	2 × 100	3	KVM
ir3.2xlarge.4	8	32	15/4.5	140	4	2 × 200	4	KVM
ir3.4xlarge.4	16	64	20/9	250	8	2 × 400	8	KVM
ir3.8xlarge.4	32	128	30/18	450	16	2 × 800	8	KVM

Ultra-high I/O I3 ECSs

Overview

I3 ECSs use Intel® Xeon® Scalable processors and high-performance local NVMe SSDs to provide high storage IOPS and low read/write latency.

Notes

For details, see **Notes**.

Scenarios

- High-performance relational databases.
- NoSQL databases (such as Cassandra and MongoDB) and ElasticSearch

Specifications

Table 7-117 I3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Local Disks (GiB)	Max. NICs	Virtualization
i3.2xlarge.8	8	64	2.5/2.5	100	4	1 × 1,600 GiB NVMe	4	KVM
i3.4xlarge.8	16	128	5/5	150	4	2 × 1,600 GiB NVMe	8	KVM
i3.8xlarge.8	32	256	10/10	200	8	4 × 1,600 GiB NVMe	8	KVM
i3.12xlarge.8	48	384	15/15	240	8	6 × 1,600 GiB NVMe	8	KVM
i3.15xlarge.8	60	512	25/25	500	16	7 × 1,600 GiB NVMe	8	KVM
i3.16xlarge.8	64	512	25/25	500	16	8 × 1,600 GiB NVMe	8	KVM

Scenarios

- Ultra-high I/O ECSs are suitable for high-performance relational databases.
- Ultra-high I/O ECSs are suitable for NoSQL databases (such as Cassandra and MongoDB) and ElasticSearch.

Features

Table 7-118 and **Table 7-119** list the IOPS performance of local disks and specifications of a single local disk attached to a D7i ECS.

Table 7-118 IOPS performance of local disks used by D7i ECSs

Flavor	Maximum IOPS for Random 4 KB Read
d7i.2xlarge.4	960,000
d7i.4xlarge.4	1,920,000
d7i.8xlarge.4	3,840,000
d7i.12xlarge.4	5,760,000
d7i.16xlarge.4	7,680,000
d7i.24xlarge.4	11,520,000

Table 7-119 Specifications of a single local disk attached to a D7i ECS

Metric	Performance
Disk capacity	15.36T
IOPS for random 4 KB read	960,000
IOPS for random 4 KB write	75,000
Read throughput	4.3 GiB/s
Write throughput	3.8 GiB/s
Access latency	Within microseconds

Table 7-120 lists the IOPS performance of local disks attached to an Ir7 ECS.

Table 7-120 IOPS performance of local disks used by Ir7 ECSs

Flavor	Maximum IOPS for Random 4 KB Read
ir7.large.4	28,125
ir7.xlarge.4	56,250
ir7.2xlarge.4	112,500
ir7.4xlarge.4	225,000
ir7.8xlarge.4	450,000
ir7.16xlarge.4	900,000

Table 7-121 and Table 7-122 list the IOPS performance of local disks and specifications of a single local disk attached to an I7 ECS.

Table 7-121 IOPS performance of local disks used by I7 ECSs

Flavor	Maximum IOPS for Random 4 KB Read
i7.2xlarge.4	900,000
i7.4xlarge.4	1,800,000
i7.8xlarge.4	3,600,000
i7.12xlarge.4	5,400,000
i7.16xlarge.4	7,200,000
i7.24xlarge.4	10,800,000

Table 7-122 Specifications of a single local disk attached to an I7 ECS

Metric	Performance
Disk capacity	1.6 TB
IOPS for random 4 KB read	900,000
IOPS for random 4 KB write	250,000
Read throughput	6.2 GiB/s
Write throughput	2.1 GiB/s
Access latency	Within microseconds

Table 7-123 and Table 7-124 list the IOPS performance of local disks and specifications of a single local disk attached to an aI7 ECS.

Table 7-123 IOPS performance of local disks used by aI7 ECSs

Flavor	Maximum IOPS for Random 4 KB Read
ai7.2xlarge.8	900,000
ai7.16xlarge.8	7,200,000
ai7.24xlarge.8	10,800,000

Table 7-124 Specifications of a single local disk attached to an aI7 ECS

Metric	Performance
Disk capacity	1.6 TB
IOPS for random 4 KB read	900,000
IOPS for random 4 KB write	200,000
Read throughput	6.6 GiB/s
Write throughput	2 GiB/s
Access latency	Within microseconds

Table 7-125 lists the IOPS performance of local disks attached to an Ir7n ECS.

Table 7-125 IOPS performance of local disks used by Ir7n ECSs

Flavor	Maximum IOPS for Random 4 KB Read
ir7n.large.4	28,125
ir7n.xlarge.4	56,250
ir7n.2xlarge.4	112,500
ir7n.4xlarge.4	225,000
ir7n.8xlarge.4	450,000
ir7n.16xlarge.4	900,000

Table 7-126 and Table 7-127 list the IOPS performance of local disks and specifications of a single local disk attached to an I7n ECS.

Table 7-126 IOPS performance of local disks used by I7n ECSs

Flavor	Maximum IOPS for Random 4 KB Read
i7n.2xlarge.4	900,000
i7n.8xlarge.4	3,600,000
i7n.12xlarge.4	5,400,000
i7n.16xlarge.4	7,200,000
i7n.24xlarge.4	10,800,000

Table 7-127 Specifications of a single local disk attached to an I7n ECS

Metric	Performance
Disk capacity	1.6 TB
IOPS for random 4 KB read	900,000
IOPS for random 4 KB write	250,000
Read throughput	6.2 GiB/s
Write throughput	2.1 GiB/s
Access latency	Within microseconds

Table 7-128 lists the IOPS performance of local disks attached to an Ir3 ECS.

Table 7-128 IOPS performance of local disks used by Ir3 ECSs

Flavor	Maximum IOPS for Random 4 KB Read
ir3.large.4	25,000
ir3.xlarge.4	50,000
ir3.2xlarge.4	100,000
ir3.4xlarge.4	200,000
ir3.8xlarge.4	400,000

Table 7-129 and Table 7-130 list the IOPS performance of local disks and specifications of a single local disk attached to an I3 ECS.

Table 7-129 IOPS performance of local disks used by I3 ECSs

Flavor	Maximum IOPS for Random 4 KB Read
i3.2xlarge.8	750,000
i3.4xlarge.8	1,500,000
i3.8xlarge.8	3,000,000
i3.12xlarge.8	4,500,000
i3.15xlarge.8	5,250,000
i3.16xlarge.8	6,000,000

Table 7-130 Specifications of a single I3 local disk

Metric	Performance
Disk capacity	1.6 TB
IOPS for random 4 KB read	750,000
IOPS for random 4 KB write	200,000
Read throughput	2.9 GiB/s
Write throughput	1.9 GiB/s
Access latency	Within microseconds

Notes

- For details about the OSs supported by an ultra-high I/O ECS, see **OSs Supported by Different Types of ECSs**.
- If the host where an ultra-high I/O ECS is deployed is faulty, the ECS cannot be restored through live migration.
  - If the host is faulty or subhealthy, you need to stop the ECS for hardware repair.
  - In case of system maintenance or hardware faults, the ECS will be redeployed (to ensure HA) and cold migrated to another host. The local disk data of the ECS will not be retained.
- Ultra-high I/O ECSs do not support specifications change.
- Ultra-high I/O ECSs do not support local disk snapshots or backups.
- Ultra-high I/O ECSs can use local disks, and can also have EVS disks attached to provide a larger storage size. Note the following when using the two types of storage media:
  - Only an EVS disk, not a local disk, can be used as the system disk of an ultra-high I/O ECS.
  - Both EVS disks and local disks can be used as data disks of an ultra-high I/O ECS.
  - An ultra-high I/O ECS can have a maximum of 60 attached disks (including VBD, SCSI, and local disks).
- Modify the **fstab** file to set automatic disk mounting at ECS start. For details, see **Configuring Automatic Mounting at System Start**.
- The local disk data of an ultra-high I/O ECS if an exception occurs, such as physical server breakdown or local disk damage. If your application does not use the data reliability architecture, it is a good practice to use EVS disks to build your ECS.
- When an ultra-high I/O ECS is deleted, the data on local NVMe SSDs will also be automatically deleted, which can take some time. As a result, an ultra-high I/O ECS takes a longer time than other ECSs to be deleted. Back up the data before deleting such an ECS.
- The data reliability of local disks depends on the reliability of physical servers and hard disks, which are SPOF-prone. It is a good practice to use data

redundancy mechanisms at the application layer to ensure data availability. Use EVS disks to store service data that needs to be stored for a long time.

- The device name of a local disk attached to an ultra-high I/O ECS is **/dev/nvme0n1** or **/dev/nvme0n2**.
- Local disks attached to Ir3 ECSs can be split for multiple ECSs to use. If a local disk is damaged, the ECSs that use this disk will be affected.

  You are advised to add Ir3 ECSs to an ECS group during the creation process to prevent such failures. For details, see **Managing ECS Groups**.
- The basic resources, including vCPUs, memory, and image of an ultra-high I/O ECS will continue to be billed after the ECS is stopped. To stop the ECS from being billed, delete it and its associated resources.
- The %util parameter of a local disk indicates a percentage of CPU time during which I/O requests were issued to the device, so it is a perfect indication of how busy they really are. For parallel disks such as NVMe SSD local disks, the %util parameter does not indicate how busy they really are.

Handling Damaged Local Disks Attached to an ECS of I Series

If a local disk attached to an ECS is damaged, perform the following operations to handle this issue:

For a Linux ECS:

1. Detach the faulty local disk.
   a. Run the following command to query the mount point of the faulty disk:

      df –Th

      Figure 7-4 Querying the mount point

      ```
      [root@ecs-xxxx ~]# df -Th
      Filesystem     Type      Size  Used Avail Use% Mounted on
      devtmpfs       devtmpfs  4.0M     0  4.0M   0% /dev
      tmpfs          tmpfs      16G     0   16G   0% /dev/shm
      tmpfs          tmpfs      16G  8.6M   16G   1% /run
      tmpfs          tmpfs     4.0M     0  4.0M   0% /sys/fs/cgroup
      /dev/vda1      ext4       60G  2.4G   54G   5% /
      tmpfs          tmpfs      16G   32K   16G   1% /tmp
      /dev/nvme0n1   ext4      1.5T   28K  1.4T   1% /mnt/nvme0
      ```

   b. Run the following command to detach the faulty local disk:

      umount *Mount point*

      In the example shown in **Figure 7-4**, the mount point of **/dev/nvme0n1** is **/mnt/nvme0**. Run the following command:

      umount /mnt/nvme0
2. Check whether the mount point of the faulty disk is configured in **/etc/fstab** of the ECS. If yes, comment out the mount point to prevent the ECS from entering the maintenance mode upon ECS startup after the faulty disk is replaced.
   a. Run the following command to obtain the partition UUID:

      blkid *Disk partition*

      In this example, run the following command to obtain the UUID of the **/dev/nvme0n1** partition:

blkid /dev/nvme0n1

Information similar to the following is displayed:

```
/dev/nvme0n1: UUID="b9a07b7b-9322-4e05-ab9b-14b8050cd8cc" TYPE="ext4"
```

b. Run the following command to check whether **/etc/fstab** contains the automatic mounting information about the disk partition:

cat /etc/fstab

Information similar to the following is displayed:

```
UUID=b9a07b7b-9322-4e05-ab9b-14b8050cd8cc    /mnt    ext4    defaults        0 0
```

c. If the mounting information exists, perform the following steps to delete it.

i. Run the following command to edit **/etc/fstab**:

vi /etc/fstab

Use the UUID obtained in **2.a** to check whether the mounting information of the local disk is contained in **/etc/fstab**. If yes, comment out the information. This prevents the ECS from entering the maintenance mode upon ECS startup after the local disk is replaced.

ii. Press **i** to enter editing mode.

iii. Delete or comment out the automatic mounting information of the disk partition.

For example, add a pound sign (#) at the beginning of the following command line to comment out the automatic mounting information:

```
# UUID=b9a07b7b-9322-4e05-ab9b-14b8050cd8cc    /mnt    ext4    defaults        0 0
```

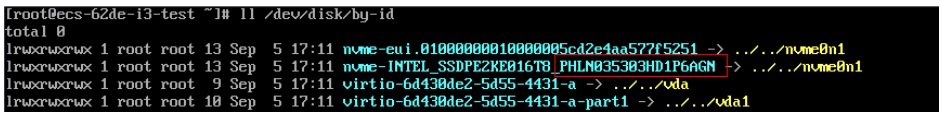
iv. Press **Esc** to exit editing mode. Enter **:wq** and press **Enter** to save the settings and exit.

3. Run the following command to obtain the SN of the local disk:

For example, if the nvme0n1 disk is faulty, obtain the serial number of the nvme0n1 disk.

ll /dev/disk/by-id/

Figure 7-5 Querying the serial number of the faulty local disk



4. Stop the ECS and provide the serial number of the faulty disk to technical support personnel to replace the local disk.

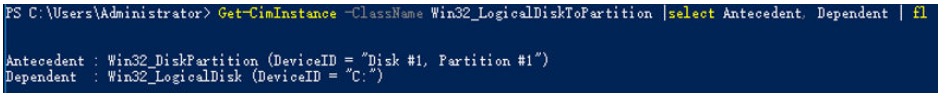
After the local disk is replaced, restart the ECS to synchronize the new local disk information to the virtualization layer.

For a Windows ECS:

1. Open **Computer Management**, choose **Computer Management (Local)** > **Storage** > **Disk Management**, and view the disk ID, for example, Disk 1.
2. Open Windows PowerShell as an administrator and run the following command to query the disk on which the logical disk is created:

Get-CimInstance -ClassName Win32_LogicalDiskToPartition |select Antecedent, Dependent | fl

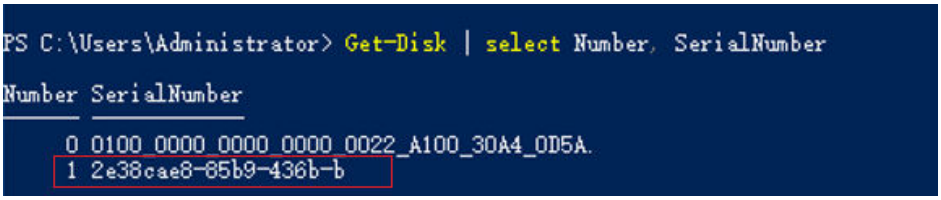
Figure 7-6 Querying the disk on which the logical disk is created



3. Run the following command to obtain the serial number of the faulty disk according to the mapping between the disk ID and serial number:

   Get-Disk | select Number, SerialNumber

   Figure 7-7 Querying the mapping between the disk ID and serial number



   NOTE

   If the serial number cannot be obtained by running the preceding command, see **Using a Serial Number to Obtain the Disk Name (Windows)**.

4. Stop the ECS and provide the serial number of the faulty disk to technical support personnel to replace the local disk.

   After the local disk is replaced, restart the ECS to synchronize the new local disk information to the virtualization layer.

7.9 High-Performance Computing ECSs

Overview

Each vCPU of a high-performance computing ECS corresponds to the hyper thread of an Intel® Xeon® Scalable processor core. High-performance computing ECSs provide resources and high-performance infrastructure services for high-performance computing and massive storage.

Available now: H3 and Hc2

Table 7-131 High-performance computing ECS features

Flavor	Compute	Disk Type	Network
H3	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 32 • Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 3.2 GHz/4.2 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 17 Gbit/s
Hc2	• vCPU to memory ratio: 1:2 or 1:4 • Number of vCPUs: 2 to 32 • Intel® Xeon® Processor E5 v4 family • Basic/Turbo frequency: 2.6 GHz/3.5 GHz		• Ultra-high PPS throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 600,000 • Maximum intranet bandwidth: 13 Gbit/s

High-Performance Computing H3 ECSs

Overview

H3 ECSs use high-performance Intel® Xeon® Scalable processors. Each vCPU corresponds to the hyper thread of an Intel® Xeon® Scalable processor core, providing stable computing capabilities. H3 ECSs are suitable for high-performance computing. In addition, such ECSs use the latest-generation network acceleration engines and DPDK rapid packet processing mechanism to provide high network performance.

Scenarios

- Computing and storage systems for genetic engineering, games, animations, and biopharmaceuticals
- Public rendering platforms for renderfarms and animation and film bases; other rendering platforms for movies and videos
- High-performance frontend clusters, web servers, high-performance science and engineering applications, advertisements, video coding, and distributed analysis
- Batch-processed workload, HPC applications, and SAP applications
- Computing-intensive services, such as large-scale multiplayer online (MMO) gaming

Specifications

Table 7-132 H3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
h3.large.2	2	4	2/1	30	2	KVM
h3.xlarge.2	4	8	4/2	60	2	KVM
h3.2xlarge.2	8	16	6/3.5	120	4	KVM
h3.3xlarge.2	12	24	6/5.5	160	4	KVM
h3.4xlarge.2	16	32	12/7.5	200	8	KVM
h3.6xlarge.2	24	48	15/11	300	8	KVM
h3.8xlarge.2	32	64	17/15	400	16	KVM
h3.large.4	2	8	2/1	30	2	KVM
h3.xlarge.4	4	16	4/2	60	2	KVM
h3.2xlarge.4	8	32	6/3.5	120	4	KVM
h3.3xlarge.4	12	48	6/5.5	160	4	KVM
h3.4xlarge.4	16	64	12/7.5	200	8	KVM
h3.6xlarge.4	24	96	15/11	300	8	KVM
h3.8xlarge.4	32	128	17/15	400	16	KVM

High-Performance Computing Hc2 ECSs

Overview

The vCPU/memory ratio of an Hc2 ECS is 1:2 or 1:4. Each vCPU corresponds to the hyperthreading of an Intel® Xeon® Scalable processor core. Hc2 ECSs can be used for high-performance computing services. They provide a large number of parallel

computing resources and high-performance infrastructure services to meet the requirements of high-performance computing and massive storage and ensure rendering efficiency.

Scenarios

- Computing and storage systems for genetic engineering, games, animations, and biopharmaceuticals
- Public rendering platforms for renderfarms and animation and film bases; other rendering platforms for movies and videos
- High-performance frontend clusters, web servers, high-performance science and engineering applications, advertisements, video coding, and distributed analysis
- Batch-processed workload, HPC applications, and SAP applications
- Computing-intensive services, such as large-scale multiplayer online (MMO) gaming

Specifications

Table 7-133 Hc2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Virtualization
hc2.large.2	2	4	1.5/0.5	10	1	KVM
hc2.xlarge.2	4	8	3/1	15	1	KVM
hc2.2xlarge.2	8	16	5/2	30	2	KVM
hc2.4xlarge.2	16	32	8/4	40	4	KVM
hc2.8xlarge.2	32	64	13/8	60	8	KVM
hc2.large.4	2	8	1.5/0.5	10	1	KVM
hc2.xlarge.4	4	16	3/1	15	1	KVM
hc2.2xlarge.4	8	32	5/2	30	2	KVM
hc2.4xlarge.4	16	64	8/4	40	4	KVM
hc2.8xlarge.4	32	128	13/8	60	8	KVM

7.10 GPU-accelerated ECSs

GPU-accelerated ECSs provide outstanding floating-point computing capabilities. They are suitable for applications that require real-time, highly concurrent massive computing.

GPU-accelerated ECS Types

Recommended: **Computing-accelerated P2s** and **Inference-accelerated Pi2**

Available now: All GPU models except the recommended ones. If available ECSs are sold out, use the recommended ones.

- G series
  - **Graphics-accelerated Enhancement G6v**
  - **Graphics-accelerated Enhancement G6**
  - **Graphics-accelerated Enhancement G5**
  - **Graphics-accelerated Enhancement G3**
  - **Graphics-accelerated G1**
- P series
  - **Computing-accelerated P2vs**
  - **Computing-accelerated P2s** (recommended)
  - **Computing-accelerated P2v**
  - **Inference-accelerated Pi2** (recommended)
  - **Inference-accelerated Pi1**

Helpful links:

- **Images Supported by GPU-accelerated ECSs**
- **Installing a GRID Driver on a GPU-accelerated ECS**
- **Installing a NVIDIA GPU Driver and CUDA Toolkit on a GPU-accelerated ECS**

Table 7-134 GPU-accelerated ECSs

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Graphics-accelerated	G6v	NVIDIA T4 (vGPU virtualization)	2,560	• 8.1 TFLOPS of single-precision floating-point computing • 130 INT8 TOPS • 260 INT4 TOPS	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Graphics-accelerated	G6	NVIDIA T4 (GPU passthrough)	2,560	• 8.1 TFLOPS of single-precision floating-point computing • 130 INT8 TOPS • 260 INT4 TOPS	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G5	NVIDIA V100	5,120	• 14 TFLOPS of single-precision floating-point computing • 7 TFLOPS of double-precision floating-point computing • 112 TFLOPS Tensor Cores for deep learning acceleration	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G3	NVIDIA M60 (GPU passthrough)	2,048	4.8 TFLOPS of single-precision floating-point computing	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design
Graphics-accelerated	G1	NVIDIA M60 (GPU virtualization)	2,048	4.8 TFLOPS of single-precision floating-point computing	Cloud desktop, image rendering, 3D visualization, and heavy-load graphics design

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Computing-accelerated	P2vs	NVIDIA V100 NVLink (GPU passthrough)	5,120	• 15.7 TFLOPS of single-precision floating-point computing • 7.8 TFLOPS of double-precision floating-point computing • 125 TFLOPS Tensor Cores for deep learning acceleration • 300 GiB/s NVLINK	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding
Computing-accelerated	P2s	NVIDIA V100	5,120	• 14 TFLOPS of single-precision floating-point computing • 7 TFLOPS of double-precision floating-point computing • 112 TFLOPS Tensor Cores for deep learning acceleration	AI deep learning training, scientific computing, computational fluid dynamics, computational finance, seismic analysis, molecular modeling, and genomics.

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Computing-accelerated	P2v	NVIDIA V100 NVLink (GPU passthrough)	5,120	• 15.7 TFLOPS of single-precision floating-point computing • 7.8 TFLOPS of double-precision floating-point computing • 125 TFLOPS Tensor Cores for deep learning acceleration • 300 GiB/s NVLINK	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding
Inference-accelerated	Pi2	NVIDIA T4 (GPU passthrough)	2,560	• 8.1 TFLOPS of single-precision floating-point computing • 130 INT8 TOPS • 260 INT4 TOPS	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding

Category	Type	GPU	CUDA Cores per GPU	Single-GPU Performance	Application
Inference-accelerated	Pi1	NVIDIA P4 (GPU passthrough)	2,560	5.5 TFLOPS of single-precision floating-point computing	Machine learning, deep learning, inference training, scientific computing, seismic analysis, computing finance, rendering, multimedia encoding and decoding

Images Supported by GPU-accelerated ECSs

Table 7-135 Images supported by GPU-accelerated ECSs

Category	ECS Type	Supported Image
Graphics-accelerated	G6v	• CentOS 8.2 64bit • CentOS 7.6 64bit • Ubuntu 20.04 server 64bit • Ubuntu 18.04 server 64bit
Graphics-accelerated	G6	• Huawei Cloud EulerOS 2.0 64bit • CentOS 8.2 64bit • CentOS 8.1 64bit • CentOS 8.0 64bit • CentOS 7.9 64bit • CentOS 7.8 64bit • CentOS 7.7 64bit • CentOS 7.6 64bit • CentOS 7.5 64bit • Ubuntu 22.04 64bit • Ubuntu 20.04 64bit • Ubuntu 18.04 64bit • Ubuntu 16.04 64bit

Category	ECS Type	Supported Image
Graphics-accelerated	G5	• CentOS 7.6 64bit • CentOS 7.5 64bit • Ubuntu 20.04 64bit • Ubuntu 18.04 64bit
Graphics-accelerated	G3	• CentOS 7.3 64bit • Ubuntu 16.04 64bit • Ubuntu 14.04 64bit
Graphics-accelerated	G1	• CentOS 7.3 64bit • Ubuntu 16.04 64bit • Ubuntu 14.04 64bit
Computing-accelerated	P2vs	• CentOS 7.5 64bit • Ubuntu 16.04 Server 64bit
Computing-accelerated	P2s	• Huawei Cloud EulerOS 2.0 64bit • CentOS 8.2 64bit • CentOS 7.9 64bit • CentOS 7.8 64bit • CentOS 7.7 64bit • CentOS 7.6 64bit • CentOS 7.5 64bit • Ubuntu 22.04 Server 64bit • Ubuntu 20.04 Server 64bit • Ubuntu 18.04 Server 64bit • Ubuntu 16.04 Server 64bit
Computing-accelerated	P2v	• CentOS 7.4 64bit • EulerOS 2.2 64bit • Ubuntu 20.04 Server 64bit • Ubuntu 18.04 Server 64bit • Ubuntu 16.04 Server 64bit

Category	ECS Type	Supported Image
Inference-accelerated	Pi2	• Huawei Cloud EulerOS 2.0 64bit • CentOS 8.2 64bit • CentOS 8.1 64bit • CentOS 8.0 64bit • CentOS 7.9 64bit • CentOS 7.8 64bit • CentOS 7.7 64bit • CentOS 7.6 64bit • CentOS 7.5 64bit • Ubuntu 22.04 Server 64bit • Ubuntu 20.04 Server 64bit • Ubuntu 18.04 Server 64bit • Ubuntu 16.04 Server 64bit
Inference-accelerated	Pi1	• CentOS 7.3 64bit • Ubuntu 20.04 Server 64bit • Ubuntu 16.04 Server 64bit • Ubuntu 14.04 Server 64bit

Graphics-accelerated Enhancement G6v

Overview

G6v ECSs use NVIDIA Tesla T4 GPUs to support DirectX, OpenGL, and Vulkan and provide 8 GiB of GPU memory. The theoretical Pixel rate is 101.8 Gpixel/s and Texture rate 254.4 GTexel/s, meeting professional graphics processing requirements. Each T4 GPU can be virtualized to be shared by two or four ECSs.

Select your desired GPU-accelerated ECS type and specifications.

Specifications

Table 7-136 G6v ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g6v.2xlarge.2	8	16	6/2	35	4	1/8 × T4	2	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g6v.2xlarge.4	8	32	10/4	50	4	1/4 × T4	4	KVM
g6v.4xlarge.4	16	64	15/8	100	8	1/2 × T4	8	KVM

G6v ECS Features

- CPU: 2nd Generation Intel® Xeon® Scalable 6266 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Graphics acceleration APIs
  - DirectX 12, Direct2D, and DirectX Video Acceleration (DXVA)
  - OpenGL 4.5
  - Vulkan 1.0
- CUDA and OpenCL
- NVIDIA T4 GPUs with 16 GB GPU memory

  Virtual shards of instances:
  - 1/8, 1/4, and 1/2 of computing performance of NVIDIA Tesla T4
  - 2 GB, 4 GB, and 8 GB GPU memory
- Graphics applications accelerated
- Heavy-load CPU inference
- Automatic scheduling of G6 ECSs to AZs where NVIDIA T4 GPUs are used
- One NVENC engine and two NVDEC engines embedded

Supported Common Software

G6v ECSs are used in graphics acceleration scenarios, such as image rendering, cloud desktop, cloud gaming, and 3D visualization. If the software relies on GPU DirectX and OpenGL hardware acceleration, use G6v ECSs. G6v ECSs support the following commonly used graphics processing software:

- AutoCAD
- 3DS MAX
- MAYA
- Agisoft PhotoScan
- ContextCapture

Notes

- After a G6v ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a G6v ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.

- G6v ECSs created using a public image have had the GRID driver of a specific version installed by default. However, you need to purchase and configure a GRID license by yourself. Ensure that the GRID driver version meets service requirements.

  For details about how to configure a GRID license, see **Installing a GRID Driver on a GPU-accelerated ECS**.

- If a G6v ECS is created using a private image, make sure that the GRID driver was installed during the private image creation. If the GRID driver has not been installed, install the driver for graphics acceleration after the ECS is created.

  For details, see **Installing a GRID Driver on a GPU-accelerated ECS**.

- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Graphics-accelerated Enhancement G6

Overview

G6 ECSs use NVIDIA Tesla T4 GPUs to support DirectX, OpenGL, and Vulkan and provide 16 GiB of GPU memory. The theoretical Pixel rate is 101.8 Gpixel/s and Texture rate 254.4 GTexel/s, meeting professional graphics processing requirements.

Select your desired GPU-accelerated ECS type and specifications.

Specifications

Table 7-137 G6 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Memory (GiB)	Virtualization
g6.xlarge.4	4	16	6/2	200	8	8	1 × T4	16	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Memory (GiB)	Virtualization
g6.4xlarge.4	16	64	15/8	200	8	8	1 × T4	16	KVM
g6.6xlarge.4	24	96	25/15	200	8	8	1 × T4	16	KVM
g6.9xlarge.7	36	252	25/15	200	16	8	1 × T4	16	KVM
g6.10xlarge.7	40	280	25/15	200	16	8	1 × T4	16	KVM
g6.18xlarge.7	72	504	30/30	400	32	16	2 × T4	32	KVM
g6.20xlarge.7	80	560	30/30	400	32	16	2 × T4	32	KVM

G6 ECS Features

- CPU: 2nd Generation Intel® Xeon® Scalable 6266 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Graphics acceleration APIs
  - DirectX 12, Direct2D, and DirectX Video Acceleration (DXVA)
  - OpenGL 4.5
  - Vulkan 1.0
- CUDA and OpenCL
- NVIDIA T4 GPUs
- Graphics applications accelerated
- Heavy-load CPU inference
- Automatic scheduling of G6 ECSs to AZs where NVIDIA T4 GPUs are used
- One NVENC engine and two NVDEC engines embedded

Supported Common Software

G6 ECSs are used in graphics acceleration scenarios, such as video rendering, cloud desktop, and 3D visualization. If the software relies on GPU DirectX and OpenGL hardware acceleration, use G6 ECSs. G6 ECSs support the following commonly used graphics processing software:

- AutoCAD
- 3DS MAX
- MAYA
- Agisoft PhotoScan
- ContextCapture

Notes

- After a G6 ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a G6 ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.

- G6 ECSs created using a public image have had the GRID driver of a specific version installed by default. However, you need to purchase and configure a GRID license by yourself. Ensure that the GRID driver version meets service requirements.

  For details about how to configure a GRID license, see **Installing a GRID Driver on a GPU-accelerated ECS**.

- If a G6 ECS is created using a private image, make sure that the GRID driver was installed during the private image creation. If not, install the driver for graphics acceleration after the ECS is created.

  For details, see **Installing a GRID Driver on a GPU-accelerated ECS**.

- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Graphics-accelerated Enhancement G5

Overview

G5 ECSs use NVIDIA Tesla V100 GPUs and support DirectX, OpenGL, and Vulkan. These ECSs provide 16 GiB of GPU memory and up to 4096 x 2160 resolution, meeting requirements on professional graphics processing.

Select your desired GPU-accelerated ECS type and specifications.

Specifications

Table 7-138 G5 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g5.4xlarge.4	16	64	15/8	100	8	V100-8Q	8	KVM
g5.8xlarge.4	32	128	25/15	200	16	1 × V100	16	KVM

NOTE

A g5.8xlarge.4 ECS exclusively uses a V100 GPU for professional graphics acceleration. Such an ECS can be used for heavy-load CPU inference.

G5 ECS Features

- CPU: 2nd Generation Intel® Xeon® Scalable 6278 processors (2.6 GHz of base frequency and 3.5 GHz of turbo frequency), or Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Graphics acceleration APIs
  - DirectX 12, Direct2D, and DirectX Video Acceleration (DXVA)
  - OpenGL 4.5
  - Vulkan 1.0
- CUDA and OpenCL
- NVIDIA V100 GPUs
- Graphics applications accelerated
- Heavy-load CPU inference
- Automatic scheduling of G5 ECSs to AZs where NVIDIA V100 GPUs are used
- A maximum specification of 16 GiB of GPU memory and 4096 x 2160 resolution for processing graphics and videos

Supported Common Software

G5 ECSs are used in graphics acceleration scenarios, such as video rendering, cloud desktop, and 3D visualization. If the software relies on GPU DirectX and OpenGL hardware acceleration, use G5 ECSs. G5 ECSs support the following commonly used graphics processing software:

- AutoCAD
- 3DS MAX
- MAYA
- Agisoft PhotoScan

- ContextCapture
- Smart3D 3D modeling software

Notes

- After a G5 ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a G5 ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.
- For G5 ECSs, you need to configure the GRID license after the ECS is created.
- G5 ECSs created using a public image have had the GRID driver of a specific version installed by default. However, you need to purchase and configure a GRID license by yourself. Ensure that the GRID driver version meets service requirements.

  For details about how to configure a GRID license, see **Installing a GRID Driver on a GPU-accelerated ECS**.
- If a G5 ECS is created using a private image, make sure that the GRID driver was installed during the private image creation. If not, install the driver for graphics acceleration after the ECS is created.

  For details, see **Installing a GRID Driver on a GPU-accelerated ECS**.
- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Graphics-accelerated Enhancement G3

Overview

G3 ECSs are based on PCI passthrough and exclusively use GPUs for professional graphics acceleration. In addition, G3 ECSs use NVIDIA Tesla M60 GPUs and support DirectX and OpenGL with up to 16 GiB of GPU memory and 4096 x 2160 resolution. They are ideal for professional graphics workstations.

Specifications

Table 7-139 G3 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g3.4xlarge.4	16	64	8/2.5	50	2	1 x M60	1 x 8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Virtualization
g3.8xlarge.4	32	128	10/5	100	4	2 x M60	2 x 8	KVM

NOTE

Every NVIDIA Tesla M60 card is equipped with two M60 GPUs, each of which provides 2,048 CUDA cores and 8 GiB of GPU memory. M60 in G series of ECSs indicates M60 GPUs, but not M60 cards.

G3 ECS Features

- CPU: Intel® Xeon® E5-2697 v4 processors (2.3 GHz of base frequency and 3.5 GHz of turbo frequency)
- Provide professional graphics acceleration APIs
- NVIDIA M60 GPUs
- Graphics applications accelerated
- GPU passthrough
- Automatic scheduling of G3 ECSs to AZs where NVIDIA M60 GPUs are used
- A maximum specification of 16 GiB of GPU memory and 4096 x 2160 resolution for processing graphics and videos

Notes

- After a G3 ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a G3 ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.
- When the Windows OS running on a G3 ECS is started, the GRID driver is loaded by default, and vGPUs are used for video output by default. In such a case, the remote login function provided on the management console is not supported. To access such an ECS, use RDP, such as Windows MSTSC. Then, install a third-party VDI tool on the ECS for remote login, such as VNC.
- By default, G3 ECSs created using a public image have had the GRID driver of a specific version installed.
- If a G3 ECS is created using a private image, make sure that the GRID driver was installed during the private image creation. If not, install the driver for graphics acceleration after the ECS is created. For details, see **Installing a GRID Driver on a GPU-accelerated ECS**.

- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Graphics-accelerated G1

Overview

G1 ECSs are based on NVIDIA GRID vGPUs and provide economical graphics acceleration. They use NVIDIA Tesla M60 GPUs and support DirectX and OpenGL. The ECSs have up to 8 GiB of GPU memory and 4096 x 2160 resolution, and are used for applications that require high performance in graphics rendering.

Specifications

Table 7-140 G1 ECS specifications

Type	vCPUs	Memory (GiB)	Flavor	Virtualization	GPUs	GPU Memory (GiB)
Basic graphics processing G1	4	8	g1.xlarge	Xen	1 × M60-1Q	1
	8	16	g1.2xlarge	Xen	1 × M60-2Q	2
	16	32	g1.4xlarge	Xen	1 × M60-4Q	4

Table 7-141 G1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth	Max. PPS	GPUs	GPU Memory (GiB)	Virtualization
g1.xlarge	4	8	Medium	Medium	1 × M60-1Q	1	Xen
g1.xlarge.4	4	16	Medium	Medium	1 × M60-1Q	1	Xen
g1.2xlarge	8	16	Medium	Medium	1 × M60-2Q	2	Xen

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth	Max. PPS	GPUs	GPU Memory (GiB)	Virtualization
g1.2xlarge.8	8	64	Medium	Medium	Passthrough	8	Xen
g1.4xlarge	16	32	Medium	Medium	1 × M60-4Q	4	Xen

NOTE

M60-xQ support vGPUs. **x** can be 1, 2, 4, or 8, indicating that M60 GPUs are virtualized to vGPUs with different specifications and models using GRID. **x** specifies the vGPU memory, and **Q** indicates that the vGPU of this type is designed to work in workstations and desktop scenarios. For more details about GRID vGPUs, see ***GRID VIRTUAL GPU User Guide***.

G1 ECS Features

- CPU: Intel® Xeon® E5-2690 v4 processors (2.6 GHz of base frequency and 3.5 GHz of turbo frequency)
- NVIDIA M60 GPUs
- Graphics applications accelerated
- GPU hardware virtualization (vGPUs) and GPU passthrough
- Automatic scheduling of G1 ECSs to AZs where NVIDIA M60 GPUs are used
- A maximum specification of 8 GiB of GPU memory and 4096 x 2160 resolution for processing graphics and videos

Notes

- After a G1 ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a G1 ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.

- G1 ECSs do not support specifications change.
- g1.2xlarge.8 G1 ECSs do not support the remote login function provided by the cloud platform. To remotely log in to such an ECS, use MSTSC to log in to it and install VNC on the ECS.

  Non-g1.2xlarge.8 G1 ECSs support remote login on the cloud platform. For details, see **Login Using VNC**.
- By default, G1 ECSs created using a public image have had the GRID driver of a specific version installed.

- If a G1 ECS is created using a private image, make sure that the GRID driver was installed during the private image creation. If not, install the driver for graphics acceleration after the ECS is created. For details, see **Installing a GRID Driver on a GPU-accelerated ECS**.
- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Computing-accelerated P2vs

Overview

P2vs ECSs use NVIDIA Tesla V100 GPUs (32 GB GPU memory) to provide flexibility, high-performance computing, and cost-effectiveness. These ECSs use GPU NVLink for direct communication between GPUs, improving data transmission efficiency. P2vs ECSs provide outstanding general computing capabilities and have strengths in AI-based deep learning, scientific computing, Computational Fluid Dynamics (CFD), computing finance, seismic analysis, molecular modeling, and genomics.

Specifications

Table 7-142 P2vs ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Connection	GPU Memory (GiB)	Virtualization
p2vs.2xlarge.8	8	64	10/4	50	4	1 × V100	N/A	1 × 32 GiB	KVM
p2vs.4xlarge.8	16	128	15/8	100	8	2 × V100	NVLink	2 × 32 GiB	KVM
p2vs.8xlarge.8	32	256	25/15	200	16	4 × V100	NVLink	4 × 32 GiB	KVM
p2vs.16xlarge.8	64	512	30/30	400	32	8 × V100	NVLink	8 × 32 GiB	KVM

P2vs ECS Features

- CPU: Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency).
- Up to eight NVIDIA Tesla V100 GPUs on an ECS
- NVIDIA CUDA parallel computing and common deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet
- 15.7 TFLOPS of single-precision computing and 7.8 TFLOPS of double-precision computing
- NVIDIA Tensor cores with 125 TFLOPS of single- and double-precision computing for deep learning
- Up to 30 Gbit/s of network bandwidth on a single ECS
- 32 GiB of HBM2 GPU memory with a bandwidth of 900 Gbit/s
- Comprehensive basic capabilities
  - User-defined network with flexible subnet division and network access policy configuration
  - Mass storage, elastic expansion, and backup and restoration
  - Elastic scaling
- Flexibility

  Similar to other types of ECSs, P2vs ECSs can be provisioned in a few minutes.
- Excellent supercomputing ecosystem

  The supercomputing ecosystem allows you to build up a flexible, high-performance, cost-effective computing platform. A large number of HPC applications and deep-learning frameworks can run on P2vs ECSs.

Supported Common Software

P2vs ECSs are used in computing acceleration scenarios, such as deep learning training, inference, scientific computing, molecular modeling, and seismic analysis. If the software is required to support GPU CUDA, use P2vs ECSs.

P2vs ECSs support the following commonly used software:

- Common deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet
- CUDA GPU rendering supported by RedShift for Autodesk 3dsMax and V-Ray for 3ds Max
- Agisoft PhotoScan
- MapD

Notes

- After a P2vs ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a P2vs ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.
- By default, P2vs ECSs created using a public image have the Tesla driver installed.

- If a P2vs ECS is created using a private image, make sure that the Tesla driver was installed during the private image creation. If not, install the driver for computing acceleration after the ECS is created. For details, see **Installing a Tesla Driver and CUDA Toolkit on a GPU-accelerated ECS**.
- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Computing-accelerated P2s

Overview

P2s ECSs use NVIDIA Tesla V100 GPUs to provide flexibility, high-performance computing, and cost-effectiveness. P2s ECSs provide outstanding general computing capabilities and have strengths in AI-based deep learning, scientific computing, Computational Fluid Dynamics (CFD), computing finance, seismic analysis, molecular modeling, and genomics.

Specifications

Table 7-143 P2s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Connection	GPU Memory (GiB)	Virtualization
p2s.2xlarge.8	8	64	10/4	50	4	4	1 × V100	PCIe Gen 3	1 × 32 GiB	KVM
p2s.4xlarge.8	16	128	15/8	100	8	8	2 × V100	PCIe Gen 3	2 × 32 GiB	KVM
p2s.8xlarge.8	32	256	25/15	200	16	8	4 × V100	PCIe Gen 3	4 × 32 GiB	KVM
p2s.16xlarge.8	64	512	30/30	400	32	8	8 × V100	PCIe Gen 3	8 × 32 GiB	KVM

P2s ECS Features

- CPU: 2nd Generation Intel® Xeon® Scalable 6278 processors (2.6 GHz of base frequency and 3.5 GHz of turbo frequency), or Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Up to eight NVIDIA Tesla V100 GPUs on an ECS

- NVIDIA CUDA parallel computing and common deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet
- 14 TFLOPS of single-precision computing and 7 TFLOPS of double-precision computing
- NVIDIA Tensor cores with 112 TFLOPS of single- and double-precision computing for deep learning
- Up to 30 Gbit/s of network bandwidth on a single ECS
- 32 GiB of HBM2 GPU memory with a bandwidth of 900 Gbit/s
- Comprehensive basic capabilities
  - User-defined network with flexible subnet division and network access policy configuration
  - Mass storage, elastic expansion, and backup and restoration
  - Elastic scaling
- Flexibility

  Similar to other types of ECSs, P2s ECSs can be provisioned in a few minutes.
- Excellent supercomputing ecosystem

  The supercomputing ecosystem allows you to build up a flexible, high-performance, cost-effective computing platform. A large number of HPC applications and deep-learning frameworks can run on P2s ECSs.

Supported Common Software

P2s ECSs are used in computing acceleration scenarios, such as deep learning training, inference, scientific computing, molecular modeling, and seismic analysis. If the software is required to support GPU CUDA, use P2s ECSs. P2s ECSs support the following commonly used software:

- Common deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet
- CUDA GPU rendering supported by RedShift for Autodesk 3dsMax and V-Ray for 3ds Max
- Agisoft PhotoScan
- MapD

Notes

- After a P2s ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a P2s ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.
- By default, P2s ECSs created using a public image have the Tesla driver installed.
- If a P2s ECS is created using a private image, make sure that the Tesla driver was installed during the private image creation. If not, install the driver for computing acceleration after the ECS is created. For details, see **Installing a Tesla Driver and CUDA Toolkit on a GPU-accelerated ECS**.

- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Computing-accelerated P2v

Overview

P2v ECSs use NVIDIA Tesla V100 GPUs and deliver high flexibility, high-performance computing, and high cost-effectiveness. These ECSs use GPU NVLink for direct communication between GPUs, improving data transmission efficiency. P2v ECSs provide outstanding general computing capabilities and have strengths in AI-based deep learning, scientific computing, Computational Fluid Dynamics (CFD), computing finance, seismic analysis, molecular modeling, and genomics.

Specifications

Table 7-144 P2v ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Connection	GPU Memory (GiB)	Virtualization
p2v.2xlarge.8	8	64	10/4	50	4	4	1 × V100	N/A	1 × 16 GiB	KVM
p2v.4xlarge.8	16	128	15/8	100	8	8	2 × V100	NVLink	2 × 16 GiB	KVM
p2v.8xlarge.8	32	256	25/15	200	16	8	4 × V100	NVLink	4 × 16 GiB	KVM
p2v.16xlarge.8	64	512	30/30	400	32	8	8 × V100	NVLink	8 × 16 GiB	KVM

P2v ECS Features

- CPU: Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency).
- Up to eight NVIDIA Tesla V100 GPUs on an ECS
- NVIDIA CUDA parallel computing and common deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet
- 15.7 TFLOPS of single-precision computing and 7.8 TFLOPS of double-precision computing

- NVIDIA Tensor cores with 125 TFLOPS of single- and double-precision computing for deep learning
- Up to 30 Gbit/s of network bandwidth on a single ECS
- 16 GiB of HBM2 GPU memory with a bandwidth of 900 Gbit/s
- Comprehensive basic capabilities
  - User-defined network with flexible subnet division and network access policy configuration
  - Mass storage, elastic expansion, and backup and restoration
  - Elastic scaling
- Flexibility

  Similar to other types of ECSs, P2v ECSs can be provisioned in a few minutes.
- Excellent supercomputing ecosystem

  The supercomputing ecosystem allows you to build up a flexible, high-performance, cost-effective computing platform. A large number of HPC applications and deep-learning frameworks can run on P2v ECSs.

Supported Common Software

P2v ECSs are used in computing acceleration scenarios, such as deep learning training, inference, scientific computing, molecular modeling, and seismic analysis. If the software is required to support GPU CUDA, use P2v ECSs. P2v ECSs support the following commonly used software:

- Common deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet
- CUDA GPU rendering supported by RedShift for Autodesk 3dsMax and V-Ray for 3ds Max
- Agisoft PhotoScan
- MapD

Notes

- After a P2v ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a P2v ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.
- By default, P2v ECSs created using a public image have the Tesla driver installed.
- If a P2v ECS is created using a private image, make sure that the Tesla driver was installed during the private image creation. If not, install the driver for computing acceleration after the ECS is created. For details, see **Installing a Tesla Driver and CUDA Toolkit on a GPU-accelerated ECS**.
- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Inference-accelerated Pi2

Overview

Pi2 ECSs use NVIDIA Tesla T4 GPUs dedicated for real-time AI inference. These ECSs use the T4 INT8 calculator for up to 130 TOPS of INT8 computing. The Pi2 ECSs can also be used for light-load training.

Specifications

Table 7-145 Pi2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	GPUs	GPU Memory (GiB)	Local Disks	Virtualization
pi2.2xlarge.4	8	32	10/4	50	4	4	1 × T4	1 × 16	N/A	KVM
pi2.4xlarge.4	16	64	15/8	100	8	8	2 × T4	2 × 16	N/A	KVM
pi2.8xlarge.4	32	128	25/15	200	16	8	4 × T4	4 × 16	N/A	KVM

Pi2 ECS Features

- CPU: 2nd Generation Intel® Xeon® Scalable 6278 processors (2.6 GHz of base frequency and 3.5 GHz of turbo frequency), or Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Up to four NVIDIA Tesla T4 GPUs on an ECS
- GPU hardware passthrough
- Up to 8.1 TFLOPS of single-precision computing on a single GPU
- Up to 130 TOPS of INT8 computing on a single GPU
- 16 GiB of GDDR6 GPU memory with a bandwidth of 320 GiB/s on a single GPU
- One NVENC engine and two NVDEC engines embedded

Supported Common Software

Pi2 ECSs are used in GPU-based inference computing scenarios, such as image recognition, speech recognition, and natural language processing. The Pi2 ECSs can also be used for light-load training.

Pi2 ECSs support the following commonly used software:

- Deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet

Notes

- After a Pi2 ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

  NOTE

  Resources will be released after a Pi2 ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.
- Pi2 ECSs support automatic recovery when the hosts accommodating such ECSs become faulty.
- By default, Pi2 ECSs created using a public image have the Tesla driver installed.
- If a Pi2 ECS is created using a private image, make sure that the Tesla driver was installed during the private image creation. If not, install the driver for computing acceleration after the ECS is created. For details, see **Installing a Tesla Driver and CUDA Toolkit on a GPU-accelerated ECS**.
- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

Inference-accelerated Pi1

Overview

Pi1 ECSs use NVIDIA Tesla P4 GPUs dedicated for real-time AI inference. Working with P4 INT8 calculators, Pi1 ECSs have shortened the inference latency by 15 times. Working with hardware decoding engines, Pi1 ECSs concurrently support real-time 35-channel HD video transcoding and inference.

Specifications

Table 7-146 Pi1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	GPUs	GPU Memory (GiB)	Local Disks	Virtualization
pi1.2xlarge.4	8	32	5/1.6	40	2	1 × P4	1 × 8 GiB	N/A	KVM
pi1.4xlarge.4	16	64	8/3.2	70	4	2 × P4	2 × 8 GiB	N/A	KVM
pi1.8xlarge.4	32	128	10/6.5	140	8	4 × P4	4 × 8 GiB	N/A	KVM

Pi1 ECS Features

- CPU: Intel® Xeon® E5-2697 v4 processors (2.3 GHz of base frequency and 3.5 GHz of turbo frequency)
- Up to four NVIDIA Tesla P4 GPUs on an ECS
- GPU hardware passthrough
- Up to 5.5 TFLOPS of single-precision computing on a single GPU
- Up to 22 TOPS of INT8 computing on a single GPU
- 8 GiB of ECC GPU memory with a bandwidth of 192 GiB/s on a single GPU
- Hardware video encoding and decoding engines embedded in GPUs for concurrent real-time 35-channel HD video transcoding and inference

Supported Common Software

Pi1 ECSs are used in GPU-based inference computing scenarios, such as image recognition, speech recognition, and natural language processing.

Pi1 ECSs support the following commonly used software:

- Deep learning frameworks, such as TensorFlow, Caffe, PyTorch, and MXNet

Notes

- After a pay-per-use Pi1 ECS is stopped, basic resources (including vCPUs, memory, image, and GPUs) are not billed, but its system disk is billed based on the disk capacity. If other products, such as EVS disks, EIP, and bandwidth are associated with the ECS, these products are billed separately.

NOTE

Resources will be released after a pay-per-use Pi1 ECS is stopped. If resources are insufficient at the next start, the start may fail. If you want to use such an ECS for a long period of time, do not stop the ECS or change its billing mode to yearly/monthly.

- Pi1 ECSs do not support specifications change.
- Pi1 ECSs support automatic recovery when the hosts accommodating such ECSs become faulty.
- By default, Pi1 ECSs created using a public image have the Tesla driver installed.
- If a Pi1 ECS is created using a private image, make sure that the Tesla driver was installed during the private image creation. If not, install the driver for computing acceleration after the ECS is created. For details, see **Installing a Tesla Driver and CUDA Toolkit on a GPU-accelerated ECS**.
- GPU-accelerated ECSs differ greatly in general-purpose and heterogeneous computing power. Their specifications can only be changed to other specifications of the same instance type.

7.11 AI-accelerated ECSs

AI-accelerated ECSs, powered by Ascend processors and software stacks, are dedicated for accelerating AI applications.

AI inference-accelerated ECSs use self-developed Ascend 310 processors for AI inference acceleration.

AI-accelerated ECS Types

- **Enhanced AI Inference-accelerated Ai1s (Type I)**
- **AI Inference-accelerated Ai1 (Type I)**

Table 7-147 AI-accelerated ECS features

Type	Compute	Disk Type	Network
Ai1s	• vCPU to memory ratio: 1:4 or 1:2 • Number of vCPUs: 2 to 32 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 2,000,000 • Maximum intranet bandwidth: 25 Gbit/s

Type	Compute	Disk Type	Network
Ai1	• vCPU to memory ratio: 1:4 • Number of vCPUs: 2 to 32 • 2nd Generation Intel® Xeon® Scalable Processor • Basic/Turbo frequency: 2.6 GHz/3.5 GHz		

NOTE

Ai1s is an enhancement of Ai1 and supports the latest **Ascend software stack CANN**, so Ai1s is recommended.

- The driver and CANN used by Ai1s ECSs only support version 21.0.2 (3.0.1) and cannot be upgraded.
- The driver version used by Ai1 ECSs is V100R001C32B080. The driver and CANN cannot be upgraded.

Public Images Supported by AI-accelerated ECSs

Table 7-148 Public images

Category	ECS Type	Public Images
Enhanced AI inference-accelerated (type I)	Ai1s	Ubuntu Server 18.04 64bit CentOS 7.6 64bit
AI inference-accelerated (type I)	Ai1	Ubuntu Server 16.04 64bit CentOS 7.4 64bit

Enhanced AI Inference-accelerated Ai1s (Type I)

Overview

Ai1s ECSs use Ascend 310 processors for AI acceleration. Ascend 310 processors feature low power consumption, high computing capabilities, and significantly improved energy efficiency ratio (EER). This facilitates the wide application of AI inference. Ai1s ECSs deliver the computing acceleration capabilities of the Ascend 310 processors on the cloud platform.

Ai1s ECSs are based on Atlas 300I accelerator cards. For details, go to **Ascend Community**.

AI-accelerated ECSs are ideal for computer vision, smart campus, smart city, smart transportation, smart retail, Internet-based real-time communication, and video encoding and decoding scenarios.

Specifications

Table 7-149 Ai1s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth	Max. PPS (10,000)	Ascend 310 Processors	Ascend RAM (GiB)	Max. NIC Queues	Max. NICs	Virtualization
ai1s.large.4	2	8	4/1.3	20	1	8	2	2	KVM
ai1s.xlarge.4	4	16	6/2	35	2	16	2	3	KVM
ai1s.2xlarge.4	8	32	10/4	50	4	32	4	4	KVM
ai1s.4xlarge.4	16	64	15/8	100	8	64	8	8	KVM
ai1s.8xlarge.4	32	128	25/15	200	16	128	8	8	KVM

Features

Ai1s ECSs have the following features:

- vCPU to memory ratio: 1:4
- CPU: 2nd Generation Intel® Xeon® Scalable 6278 processors (2.6 GHz of base frequency and 3.5 GHz of turbo frequency), or Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Ascend 310 processors, four of which in an Atlas300I accelerator card
- 16 TeraOPS of integer-precision computing (INT8) on one processor
- 8 GiB of GPU memory with a memory bandwidth of 50 GiB/s on one processor
- 5-channel HD video decoder (H.264/H.265) based on built-in hardware video codec engine

Notes

1. Ai1s ECSs support the following public images:
   - Ubuntu Server 18.04 64bit

- CentOS 7.6 64bit

2. Ai1s ECSs do not support modification of specifications.
3. Ai1s ECSs support automatic recovery when the hosts accommodating such ECSs become faulty.

AI Inference-accelerated Ai1 (Type I)

Overview

Ai1 ECSs use Ascend 310 processors for AI acceleration. Ascend 310 processors feature low power consumption, high computing capabilities, and significantly improved energy efficiency ratio (EER), facilitating the wide application of AI inference. Ai1 ECSs deliver the computing acceleration capabilities of the Ascend 310 processors on the cloud platform.

Ai1 ECSs are based on Atlas 300I accelerator cards. For details, go to **Ascend Community**.

Ai1 ECSs are ideal for computer vision, speech recognition, and natural language processing to support smart retail, smart campus, robot cloud brain, and safe city scenarios.

Specifications

Table 7-150 Ai1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth	Max. PPS (10,000)	Ascend 310 Processors	Ascend RAM (GiB)	Max. NIC Queues	Max. NICs	Virtualization
ai1.large.4	2	8	4/1.3	20	1	8	2	2	KVM
ai1.xlarge.4	4	16	6/2	35	2	16	2	3	KVM
ai1.2xlarge.4	8	32	10/4	50	4	32	4	4	KVM
ai1.4xlarge.4	16	64	15/8	100	8	64	8	8	KVM
ai1.8xlarge.4	32	128	25/15	200	16	128	8	8	KVM

Features

Ai1 ECSs have the following features:

- 1:4 ratio of vCPUs to memory
- CPU: 2nd Generation Intel® Xeon® Scalable 6278 processors (2.6 GHz of base frequency and 3.5 GHz of turbo frequency), or Intel® Xeon® Scalable 6151 processors (3.0 GHz of base frequency and 3.4 GHz of turbo frequency)
- Ascend 310 processors, four of which in an Atlas300I accelerator card
- 8 TeraFLOPS of half-precision computing (FP16) on one processor
- 16 TeraOPS of integer-precision computing (INT8) on one processor
- 8 GiB of GPU memory with a memory bandwidth of 50 GiB/s on one processor
- 16-channel HD video decoder (H.264/H.265) based on built-in hardware video codec engine

Notes

1. Ai1 ECSs support the following OSs:
   - Ubuntu Server 16.04 64bit
   - CentOS 7.4 64bit
2. Ai1 ECSs do not support modification of specifications.
3. Ai1 ECSs support automatic recovery when the hosts accommodating such ECSs become faulty.

Using an AI-accelerated ECS

Perform the following steps:

1. Create an ECS. For details, see **Step 1: Configure Basic Settings**.
   - In the **Specifications** field, select AI-accelerated specifications.
   - In the **Image** field, select **Public image** or **Private image**.
     - **Public image**: The CANN 3.1.0 development kit has been included and environment variables have been configured in public images by default. You need to verify the environment availability.
     - **Private image**: You need to install the driver, firmware, and development kit, and configure environment variables by yourself. For details, see the *CANN Software Installation Guide* of the corresponding version in **Ascend Documentation**.
2. Remotely log in to the ECS.

   If your Ai1 ECS runs Linux, use an SSH password to log in to the ECS. For details, see **Login Using an SSH Password**.
3. Verify the environment availability.

   Use a sample for compilation and running. For details, see "Sample Overview" in the *Model Development Learning Map* of the corresponding CANN edition in **Ascend Documentation**.

   The sample shows how to classify images (decode, resize, and infer images) based on the Caffe ResNet-50 network.

8 Kunpeng ECS Specifications and Types

8.1 A Summary List of Kunpeng ECS Specifications

For details about how to purchase a Kunpeng ECS, see **Purchasing an ECS**.

Kunpeng General Computing-plus

Table 8-1 Kunpeng general computing-plus ECS features

Type	Compute	Disk Type	Network
kC1	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 60 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 30 Gbit/s

Table 8-2 kC1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
kc1.small.1	1	1	2/0.5	20	1	2	KVM
kc1.large.2	2	4	3/0.8	30	2	2	KVM
kc1.xlarge.2	4	8	5/1.5	50	2	3	KVM
kc1.2xlarge.2	8	16	7/3	80	4	4	KVM
kc1.3xlarge.2	12	24	9/4.5	110	4	5	KVM
kc1.4xlarge.2	16	32	12/6	140	4	6	KVM
kc1.6xlarge.2	24	48	15/8.5	200	8	6	KVM
kc1.8xlarge.2	32	64	18/10	260	8	6	KVM
kc1.12xlarge.2	48	96	25/16	350	16	6	KVM
kc1.15xlarge.2	60	120	30/20	400	16	6	KVM
kc1.large.4	2	8	3/0.8	30	2	2	KVM
kc1.xlarge.4	4	16	5/1.5	50	2	3	KVM
kc1.2xlarge.4	8	32	7/3	80	4	4	KVM
kc1.3xlarge.4	12	48	9/4.5	110	4	5	KVM
kc1.4xlarge.4	16	64	12/6	140	4	6	KVM
kc1.6xlarge.4	24	96	15/8.5	200	8	6	KVM
kc1.8xlarge.4	32	128	18/10	260	8	6	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
kc1.12xlarge.4	48	192	25/16	350	16	6	KVM

Kunpeng Memory-optimized

Table 8-3 Kunpeng memory-optimized ECS features

Type	Compute	Disk Type	Network
kM1	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 60 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 30 Gbit/s

Table 8-4 kM1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
km1.large.8	2	16	3/0.8	30	2	2	KVM
km1.xlarge.8	4	32	5/1.5	50	2	3	KVM
km1.2xlarge.8	8	64	7/3	80	4	4	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
km1.3xlarge.8	12	96	9/4.5	110	4	5	KVM
km1.4xlarge.8	16	128	12/6	140	4	6	KVM
km1.6xlarge.8	24	192	15/8	200	8	6	KVM
km1.8xlarge.8	32	256	18/10	260	8	6	KVM
km1.12xlarge.8	48	384	25/16	350	16	8	KVM
km1.15xlarge.8	60	480	30/20	400	16	8	KVM

Kunpeng Ultra-high I/O

Table 8-5 Kunpeng ultra-high I/O ECS features

Type	Compute	Disk Type	Network
kI1	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 64 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 30 Gbit/s

Table 8-6 kI1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NICs	Max. NIC Queues	Local Disks	Virtualization
ki1.2xlarge.4	8	32	7/3	80	4	4	1 × 3,200 GiB	KVM
ki1.4xlarge.4	16	64	12/6	140	6	4	2 × 3,200 GiB	KVM
ki1.6xlarge.4	24	96	15/8.5	200	6	8	3 × 3,200 GiB	KVM
ki1.8xlarge.4	32	128	18/10	260	6	8	4 × 3,200 GiB	KVM
ki1.12xlarge.4	48	192	25/16	350	6	16	6 × 3,200 GiB	KVM
ki1.16xlarge.4	64	228	30/20	400	6	16	8 × 3,200 GiB	KVM

Kunpeng AI Inference-accelerated

Table 8-7 Kunpeng AI Inference-accelerated ECSs

Type	Compute	Disk Type	Network
kAi1s	• vCPU to memory ratio: 1:1 or 1:2 • Number of vCPUs: 4 to 48 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 2,000,000 • Maximum intranet bandwidth: 12 Gbit/s

Table 8-8 kAi1s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Ascend 310 Processors	Virtualization
kai1s.xlarge.1	4	4	3/0.8	20	2	2	1	KVM
kai1s.2xlarge.1	8	8	4/1.5	40	2	3	2	KVM
kai1s.4xlarge.1	16	16	6/3	80	4	4	4	KVM
kai1s.3xlarge.2	12	24	8/4	100	4	4	4	KVM
kai1s.4xlarge.2	16	32	10/6	140	4	5	6	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Ascend 310 Processors	Virtualization
kai1s.6xlarge.2	24	48	12/8	200	8	6	8	KVM
kai1s.9xlarge.2	36	72	12/8	200	8	6	12	KVM
kai1s.12xlarge.2	48	96	12/8	200	16	6	12	KVM

8.2 Kunpeng General Computing-plus ECSs

Overview

Kunpeng general computing-plus ECSs use Kunpeng processors to provide powerful compute and high-performance networks, meeting enterprise requirements for cost-effective, secure, reliable cloud services.

Available now: kC1

Table 8-9 Kunpeng general computing-plus ECS features

Type	Compute	Disk Type	Network
kC1	• vCPU to memory ratio: 1:1, 1:2, or 1:4 • Number of vCPUs: 1 to 60 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 30 Gbit/s

Specifications

Table 8-10 kC1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
kc1.small.1	1	1	2/0.5	20	1	2	KVM
kc1.large.2	2	4	3/0.8	30	2	2	KVM
kc1.xlarge.2	4	8	5/1.5	50	2	3	KVM
kc1.2xlarge.2	8	16	7/3	80	4	4	KVM
kc1.3xlarge.2	12	24	9/4.5	110	4	5	KVM
kc1.4xlarge.2	16	32	12/6	140	4	6	KVM
kc1.6xlarge.2	24	48	15/8.5	200	8	6	KVM
kc1.8xlarge.2	32	64	18/10	260	8	6	KVM
kc1.12xlarge.2	48	96	25/16	350	16	6	KVM
kc1.15xlarge.2	60	120	30/20	400	16	6	KVM
kc1.large.4	2	8	3/0.8	30	2	2	KVM
kc1.xlarge.4	4	16	5/1.5	50	2	3	KVM
kc1.2xlarge.4	8	32	7/3	80	4	4	KVM
kc1.3xlarge.4	12	48	9/4.5	110	4	5	KVM
kc1.4xlarge.4	16	64	12/6	140	4	6	KVM
kc1.6xlarge.4	24	96	15/8.5	200	8	6	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
kc1.8xlarge.4	32	128	18/10	260	8	6	KVM
kc1.12xlarge.4	48	192	25/16	350	16	6	KVM

Scenarios

Kunpeng general computing-plus ECSs are suitable for:

- Governments, enterprises, and the financial industry with strict requirements on security and privacy
- Internet applications with high requirements on network performance
- Big data and HPC with requirements on a large number of vCPUs
- Website setups and e-Commerce requiring cost-effectiveness

8.3 Kunpeng Memory-optimized ECSs

Overview

Kunpeng memory-optimized ECSs use Kunpeng 920 processors and 25GE high-speed intelligent NICs to provide up to 480 GiB DDR4-based memory with high network performance for large in-memory datasets.

Available now: kM1

Table 8-11 Kunpeng memory-optimized ECS features

Type	Compute	Disk Type	Network
kM1	• vCPU to memory ratio: 1:8 • Number of vCPUs: 2 to 60 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 30 Gbit/s

Specifications

Table 8-12 kM1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
km1.large.8	2	16	3/0.8	30	2	2	KVM
km1.xlarge.8	4	32	5/1.5	50	2	3	KVM
km1.2xlarge.8	8	64	7/3	80	4	4	KVM
km1.3xlarge.8	12	96	9/4.5	110	4	5	KVM
km1.4xlarge.8	16	128	12/6	140	4	6	KVM
km1.6xlarge.8	24	192	15/8	200	8	6	KVM
km1.8xlarge.8	32	256	18/10	260	8	6	KVM
km1.12xlarge.8	48	384	25/16	350	16	8	KVM

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Virtualization
km1.15xlarge.8	60	480	30/20	400	16	8	KVM

Scenarios

Big data analysis, precision marketing, e-commerce, IoV, and in-memory storage (such as Memcache)

8.4 Kunpeng Ultra-high I/O ECSs

Overview

Kunpeng ultra-high I/O ECSs use Kunpeng 920 processors and 25GE high-speed intelligent NICs to provide up to 480 GiB DDR4-based memory with high network performance for large in-memory datasets.

Available now: kI1

Table 8-13 Kunpeng ultra-high I/O ECS features

Type	Compute	Disk Type	Network
kI1	• vCPU to memory ratio: 1:4 • Number of vCPUs: 8 to 64 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 4,000,000 • Maximum intranet bandwidth: 30 Gbit/s

Specifications

Table 8-14 kI1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./ Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NICs	Max. NIC Queues	Local Disks	Virtualization
ki1.2xlarge.4	8	32	7/3	80	4	4	1 × 3,200 GiB	KVM
ki1.4xlarge.4	16	64	12/6	140	6	4	2 × 3,200 GiB	KVM
ki1.6xlarge.4	24	96	15/8.5	200	6	8	3 × 3,200 GiB	KVM
ki1.8xlarge.4	32	128	18/10	260	6	8	4 × 3,200 GiB	KVM
ki1.12xlarge.4	48	192	25/16	350	6	16	6 × 3,200 GiB	KVM
ki1.16xlarge.4	64	228	30/20	400	6	16	8 × 3,200 GiB	KVM

Features

Table 8-15 and Table 8-16 lists the IOPS performance of kI1 ECSs and specifications of a single local disk attached to a kI1 ECS.

Table 8-15 kI1 ECS IOPS performance

Flavor	Maximum IOPS for Random 4 KB Read
ki1.2xlarge.4	750,000
ki1.4xlarge.4	1,500,000
ki1.6xlarge.4	2,250,000
ki1.8xlarge.4	3,000,000
ki1.12xlarge.4	4,500,000

Flavor	Maximum IOPS for Random 4 KB Read
ki1.16xlarge.4	6,000,000

Table 8-16 Specifications of a single NVMe disk attached to a kI1 ECS

Metric	Performance
Disk capacity	3.2 TB
IOPS for random 4 KB read	750,000
IOPS for random 4 KB write	200,000
Read throughput	2.9 GiB/s
Write throughput	1.9 GiB/s
Access latency	Within microseconds

Notes

- For details about the OSs supported by Kunpeng ultra-high I/O ECSs, see **OSs Supported by Different Types of ECSs**.
- Kunpeng ultra-high I/O ECSs do not support specifications modification.
- Kunpeng ultra-high I/O ECSs do not support local disk snapshots or backups.
- Kunpeng ultra-high I/O ECSs can use both local disks and EVS disks to store data. In addition, they can have EVS disks attached to provide a larger storage size. Use restrictions on the two types of storage media are as follows:
  - Only an EVS disk, not a local disk, can be used as the system disk of a Kunpeng ultra-high I/O ECS.
  - Both EVS disks and local disks can be used as data disks of a Kunpeng ultra-high I/O ECS.
  - A Kunpeng ultra-high I/O ECS can have a maximum of 60 attached disks (including VBD, SCSI, and local disks). Among the 60 disks, the maximum number of SCSI disks is 30, and the maximum number of VBD disks is 22 (including the system disk).
  - It is a good practice to use World Wide Names (WWNs), but not drive letters, to perform operations on local disks to prevent drive letter drift (low probability) on Linux. Take local disk attachment as an example:

    If the local disk WWN is wwn-0x50014ee2b14249f6, run the **mount /dev/disk/by-id/wwn-0x50014ee2b14249f6** command.

NOTE

How can I view the local disk WWN?

1. Log in to the ECS.
2. Run the following command:

   ll /dev/disk/by-id

- The local disk data of a Kunpeng ultra-high I/O ECS if an exception occurs, such as physical server breakdown or local disk damage. If your application does not use the data reliability architecture, it is a good practice to use EVS disks to build your ECS.
- When a Kunpeng ultra-high I/O ECS is deleted, the data on local NVMe SSDs will also be automatically deleted, which can take some time. As a result, a Kunpeng ultra-high I/O ECS takes a longer time than other ECSs to be deleted. Back up the data before deleting such an ECS.
- The data reliability of local disks depends on the reliability of physical servers and hard disks, which are SPOF-prone. It is a good practice to use data redundancy mechanisms at the application layer to ensure data availability. Use EVS disks to store service data that needs to be stored for a long time.
- The device name of a local disk attached to a Kunpeng ultra-high I/O ECS is **/dev/nvme0n1** or **/dev/nvme0n2**.
- The basic resources, including vCPUs, memory, and image of a Kunpeng ultra-high I/O ECS will continue to be billed after the ECS is stopped. To stop the ECS from being billed, delete it and its associated resources.

Scenarios

Kunpeng ultra-high I/O ECSs can be used for high-performance relational databases, NoSQL databases (such as Cassandra and MongoDB), and ElasticSearch.

8.5 Kunpeng AI Inference-accelerated ECSs

Kunpeng AI inference-accelerated ECSs are designed to provide acceleration services for AI services. These ECSs are provided with the Ascend AI Processors and Ascend AI Software Stack.

Kunpeng AI inference-accelerated ECSs use Huawei-developed Ascend 310 processors for AI inference acceleration.

Table 8-17 Kunpeng AI Inference-accelerated ECSs

Type	Compute	Disk Type	Network
kAi1s	• vCPU to memory ratio: 1:1 or 1:2 • Number of vCPUs: 4 to 48 • Kunpeng 920 processor • Base frequency: 2.6 GHz	• High I/O • General Purpose SSD • Ultra-high I/O • Extreme SSD • General Purpose SSD V2	• Ultra-high packets per second (PPS) throughput • An ECS with higher specifications has better network performance. • Maximum PPS: 2,000,000 • Maximum intranet bandwidth: 12 Gbit/s

Kunpeng Enhanced AI Inference-accelerated kAi1s (Type I)

Overview

Kunpeng AI inference-accelerated kAi1s ECSs use Ascend 310 processors for AI acceleration. Ascend 310 processors feature low power consumption, high computing capabilities, and significantly improved energy efficiency ratio (EER), facilitating the wide application of AI inference. kAi1s ECSs deliver the computing acceleration capabilities of the Ascend 310 processors on the cloud platform. This helps you quickly and simply use the Ascend 310 processors.

kAi1s ECSs are based on Atlas 300I accelerator cards. For details, see **Ascend Community**.

kAi1s ECSs are used for general technologies, such as computer vision, speech recognition, and natural language processing to support smart retail, smart campus, robot cloud brain, and safe city scenarios.

Specifications

Table 8-18 kAi1s ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Ascend 310 Processors	Virtualization
kai1s.xlarge.1	4	4	3/0.8	20	2	2	1	KVM

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth (Gbit/s)	Max. PPS (10,000)	Max. NIC Queues	Max. NICs	Ascend 310 Processors	Virtualization
kai1s.2xlarge.1	8	8	4/1.5	40	2	3	2	KVM
kai1s.4xlarge.1	16	16	6/3	80	4	4	4	KVM
kai1s.3xlarge.2	12	24	8/4	100	4	4	4	KVM
kai1s.4xlarge.2	16	32	10/6	140	4	5	6	KVM
kai1s.6xlarge.2	24	48	12/8	200	8	6	8	KVM
kai1s.9xlarge.2	36	72	12/8	200	8	6	12	KVM
kai1s.12xlarge.2	48	96	12/8	200	16	6	12	KVM

Features

kAi1s ECSs have the following features:

- 1:1 or 1:2 ratio of vCPUs to memory
- CPU: Kunpeng 920 (2.6 GHz)
- Ascend 310 processors, four of which in an Atlas 300I accelerator card
- 8 TeraFLOPS of half-precision computing (FP16) on one processor
- 16 TeraOPS of integer-precision computing (INT8) on one processor
- 8 GiB of GPU memory with a memory bandwidth of 50 GiB/s on one processor
- Built-in hardware video codec engine, supporting H.264/H.265

Notes

- kAi1s ECSs support the following OSs:

  - Ubuntu Server 18.04 64bit
  - CentOS 7.6 64-bit
- kAi1s ECSs support automatic recovery when the hosts accommodating such ECSs become faulty.

Using a kAi1s ECS

Perform the following steps:

1. Create an ECS. For details, see **Step 1: Configure Basic Settings**.
   - In the **Specifications** field, select kAi1s-accelerated specifications.
   - In the **Image** field, select **Public image** or **Private image**.
     - **Public image**: The CANN 3.1.0 development kit has been included and environment variables have been configured in public images by default. You need to verify the environment availability.
     - **Private image**: You need to install the driver, firmware, and development kit, and configure environment variables by yourself. For details, see the *CANN Software Installation Guide* of the corresponding version in **Ascend Documentation**.
2. Remotely log in to the ECS.

   If your ECS runs Linux, use an SSH password to log in to the ECS. For details, see **Login Using an SSH Password**.
3. Verify the environment availability.

   Use a sample for compilation and running. For details, see "Sample Overview" in the *Model Development Learning Map* of the corresponding CANN edition in **Ascend Documentation**.

   The sample shows how to classify images (decode, resize, and infer images) based on the Caffe ResNet-50 network.

Helpful Links

Ascend Documentation: provides developers with common Ascend development tools to help you learn and use Ascend.

9 Discontinued ECS Specifications

The specifications listed in this section have been discontinued and are no longer available. You can change the specifications for your ECS to one that is still available.

General Computing S1

Table 9-1 S1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
s1.medium	1	4	Low	Low	Xen
s1.large	2	8	Low	Low	Xen
s1.xlarge	4	16	Medium	Medium	Xen
s1.2xlarge	8	32	Medium	Medium	Xen
s1.4xlarge	16	64	Medium	Medium	Xen
s1.8xlarge	32	128	Medium	Medium	Xen

General Computing-plus C2

Table 9-2 C2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
c2.medium	1	2	Low	Low	Xen
c2.large	2	4	Low	Low	Xen
c2.xlarge	4	8	Medium	Medium	Xen
c2.2xlarge	8	16	Medium	Medium	Xen

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
c2.4xlarge	16	32	Medium	Medium	Xen
c2.8xlarge	32	64	Medium	Medium	Xen

General Computing-plus C1

Table 9-3 C1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
c1.medium	1	1	Low	Low	Xen
c1.large	2	2	Low	Low	Xen
c1.xlarge	4	4	Medium	Medium	Xen
c1.2xlarge	8	8	Medium	Medium	Xen
c1.4xlarge	16	16	Medium	Medium	Xen
c1.8xlarge	32	32	Medium	Medium	Xen

Memory-optimized M1

Table 9-4 M1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
m1.medium	1	8	Low	Low	Xen
m1.large	2	16	Low	Low	Xen
m1.xlarge	4	32	Medium	Medium	Xen
m1.2xlarge	8	64	Medium	Medium	Xen
m1.4xlarge	16	128	Medium	Medium	Xen

Large-Memory Et2 ECSs

Table 9-5 Et2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
et2.2xlarge.16	8	128	Medium	Medium	Xen
et2.4xlarge.14	18	256	Medium	Medium	Xen
et2.8xlarge.14	36	512	Medium	Medium	Xen

Large-Memory E2

Table 9-6 E2 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
e2.3xlarge	12	256	Medium	Medium	Xen
e2.4xlarge	18	445	Medium	Medium	Xen
e2.9xlarge	36	890	Medium	Medium	Xen

Large-Memory E1

Table 9-7 E1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
e1.4xlarge	16	470	Medium	Medium	Xen
e1.8xlarge	32	940	Medium	Medium	Xen

Disk-intensive D1

Table 9-8 D1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Local Disks (GiB)	Virtualization
d1.xlarge	4	32	Medium	Medium	3 × 1675	Xen

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Local Disks (GiB)	Virtualization
d1.2xlarge	8	64	Medium	Medium	6 × 1675	Xen
d1.4xlarge	16	128	Medium	Medium	12 × 1675	Xen
d1.9xlarge	36	256	Medium	Medium	24 × 1675	Xen

Notes on Using D1 ECSs

- Do not support NIC hot swapping.
- The primary and extension NICs of a D1 ECS are used in scenarios shown in **Table 9-9**.

  Table 9-9 Application scenarios of the NICs of a D1 ECS

NIC Type	Scenarios	Remarks
Primary NIC	Vertical layer 3 communication	-
Extension NIC	Horizontal layer 2 communication	To improve network performance, you can set the MTU of an extension NIC to **8888**.

- D1 ECSs do not support specifications modification.
- D1 ECSs do not support OS reinstallation or change.
- D1 ECSs support the following OSs:
  - CentOS 7.2 64bit
  - CentOS 7.3 64bit
  - CentOS 6.8 64bit
  - SUSE Enterprise Linux Server 11 SP3 64bit
  - SUSE Enterprise Linux Server 11 SP4 64bit
  - SUSE Enterprise Linux Server 12 SP1 64bit
  - SUSE Enterprise Linux Server 12 SP2 64bit
  - Red Hat Enterprise Linux 6.8 64bit
  - Red Hat Enterprise Linux 7.3 64bit
- D1 ECSs can use both local disks and EVS disks to store data. Note the following when using these two types of disks to store data:
  - Only an EVS disk can be used as the system disk of a D1 ECS.
  - Both EVS disks and local disks can be used as data disks of a D1 ECS.

  - A D1 ECS can be attached with up to 60 disks (including local disks). For details about constraints, see **Can I Attach Multiple Disks to an ECS?**

    NOTE

    The maximum number of disks attached to an existing D1 ECS remains unchanged.

- The basic resources, including vCPUs, memory, and image of a stopped D1 ECS are still billed. To stop the ECS from being billed, delete it and its associated resources.

High-Performance Computing H1

Table 9-10 H1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	Virtualization
h1.xlarge.4	4	16	Medium	Medium	Xen
h1.2xlarge.4	8	32	Medium	Medium	Xen
h1.4xlarge.4	16	64	Medium	Medium	Xen
h1.8xlarge.4	32	128	Medium	Medium	Xen

Notes on Using H1 ECSs

- Do not support NIC hot swapping.
- Support specifications modification only if the source and target ECSs are of the same type.
- Support the following OSs:
  - CentOS 6.8 64bit
  - CentOS 7.2 64bit
  - CentOS 7.3 64bit
  - Windows Server 2008
  - Windows Server 2012
  - Windows Server 2016
  - SUSE Enterprise Linux Server 11 SP3 64bit
  - SUSE Enterprise Linux Server 11 SP4 64bit
  - SUSE Enterprise Linux Server 12 SP1 64bit
  - SUSE Enterprise Linux Server 12 SP2 64bit
  - Red Hat Enterprise Linux 6.8 64bit
  - Red Hat Enterprise Linux 7.3 64bit
- The primary and extension NICs of an H1 ECS have specified application scenarios. For details, see **Table 9-11**.

Table 9-11 Application scenarios of the NICs of an H1 ECS

NIC Type	Applicable Scenario	Description
Primary NIC	Vertical layer 3 communication	-
Extension NIC	Horizontal layer 2 communication	To improve network performance, you can set the MTU of an extension NIC to **8888**.

Graphics-accelerated G1

Table 9-12 G1 ECS specifications

Flavor	vCPUs	Memory (GiB)	Max./Assured Bandwidth	Max. PPS	GPU	GPU Memory (GiB)	Virtualization
g1.xlarge	4	8	Medium	Medium	1×M60-1Q	1	Xen
g1.xlarge.4	4	16	Medium	Medium	1×M60-1Q	1	Xen
g1.2xlarge	8	16	Medium	Medium	1×M60-2Q	2	Xen
g1.2xlarge.8	8	64	Medium	Medium	Passthrough	8	Xen
g1.4xlarge	16	32	Medium	Medium	1×M60-4Q	4	Xen

10 Images

10.1 Image Types

What Is Image?

An image is an ECS template that contains an OS. It may also contain proprietary software and application software, such as database software. You can use images to create ECSs.

Images can be public or private. Public images are provided by the system by default, and private images are manually created. You can use any type of image to create an ECS. You can also create a private image using an existing ECS. This provides you with a simple and fast way to create ECSs tailored to your needs. For example, if you use web services, your image can contain web server configurations, static configurations, and dynamic page code. After you use this image to create an ECS, the web server will run on the created ECS.

Image Types

Image Type	Description
Public image	A public image is a standard, widely used image. It contains an OS and preinstalled public applications and is available to all users. Public images are very stable and their OS and any included software have been officially authorized for use. If a public image does not contain the environments or software you need, you can use a public image to create an ECS and then deploy the required environments or software on it. Public images include the following OSs to choose from: Huawei Cloud EulerOS, CentOS, Debian, openSUSE, Fedora, Ubuntu, EulerOS, and CoreOS. For more information about public images, see **Managing Public Images**.

Image Type	Description
Private image	A private image contains an OS or service data, preinstalled public applications, and a user's personal applications. Private images are only available to the users who created them. A private image can be a system disk image, data disk image, ISO image, or full-ECS image. • A system disk image contains an OS and preinstalled software for various services. You can use a system disk image to create ECSs and migrate your services to the cloud. • A data disk image contains only service data. You can use a data disk image to create EVS disks and use them to migrate your service data to the cloud. • An ISO image is created from an external ISO image file. It is a special image that is not available on the ECS console. • A full-ECS image contains an OS, preinstalled software, and service data. A full-ECS image is created using differential backups and the creation takes less time than creating a system or data disk image that has the same disk capacity.
Shared image	A shared image is a private image another user has shared with you. For more information about shared images, see **Sharing Images**.
Marketplace image	The Marketplace is an online store where you can purchase third-party images that have the OS, application environments, and software preinstalled. You can use these images to deploy websites and application development environments in just a few clicks. No additional configuration is required. Marketplace images are provided by service providers who have extensive experience in configuring and maintaining cloud servers. All the images are thoroughly tested and have been approved by Huawei Cloud Marketplace and service providers before being published.

10.2 Cloud-Init

Cloud-Init is an open-source cloud initialization program, which initializes some of the customized configurations of a newly created ECS, such as the hostname, key pair, and user data.

Using Cloud-Init to initialize your ECSs will affect your ECS, IMS, and AS services.

Impact on IMS

To ensure that ECSs created using a private image support custom configurations, you must install Cloud-Init or Cloudbase-Init on the ECSs before using them to create private images.

- For Windows OSs, download and install Cloudbase-Init.
- For Linux OSs, download and install Cloud-Init.

After being installed in an image, Cloud-Init or Cloudbase-Init automatically configures initial attributes for the ECSs created using this image.

For more information, see **Installing Cloud-Init**.

Impact on ECS

- When creating an ECS, if the selected image supports Cloud-Init, you can use the **User Data** function to specify custom configuration, such as ECS login password to the ECS. Such custom settings will take effect upon ECS initialization.
- If Cloud-Init is supported, you can view and use metadata to configure and manage running ECSs.

Impact on AS

- When creating an AS configuration, you can use the **User Data** function to specify ECS configurations for initialization. If the AS configuration has taken effect in an AS group, the ECSs newly created in the AS group will automatically initialize their configurations based on the specified ECS configurations.
- For an existing AS configuration, if its private image does not have Cloud-Init or Cloudbase-Init installed, the login mode of the ECSs created in the AS group where the AS configuration takes effect may fail to take effect.

  To resolve this issue, see **How Does Cloud-Init Affect the AS Service?** in *Auto Scaling User Guide*.

Notes

- When using Cloud-Init, enable DHCP in the VPC to which the ECS belongs.
- When using Cloud-Init, ensure that security group rules for the outbound direction meet the following requirements:
  - **Protocol**: **TCP**
  - **Port**: **80**
  - **Destination**: **169.254.0.0/16**

  NOTE

  If you use the default security group rules for the outbound direction, the metadata can be accessed because the default rules meet the preceding requirements. For details about the default security group rules for the outbound direction, see **Security Group**.

11 EVS Disks

What Is Elastic Volume Service?

Elastic Volume Service (EVS) offers scalable block storage for ECSs. With high reliability, high performance, and rich specifications, EVS disks can be used for distributed file systems, development and test environments, data warehouses, and high-performance computing (HPC) scenarios to meet diverse service requirements.

Disk Types

EVS disk types differ in performance. Choose a disk type based on your requirements.

For more information about EVS disk specifications and performance, see **Elastic Volume Service User Guide**.

Device Types

EVS disks have two device types, Virtual Block Device (VBD) and Small Computer System Interface (SCSI).

- VBD

  When you create an EVS disk on the management console, **Device Type** of the EVS disk is VBD by default. VBD EVS disks support only simple SCSI read/write commands.

- SCSI

  You can create EVS disks whose **Device Type** is SCSI on the management console. These EVS disks support transparent SCSI command transmission, allowing ECS OS to directly access underlying storage media. SCSI EVS disks support both basic and advanced SCSI commands.

  NOTE

  For more information about how to use SCSI EVS disks, for example, how to install a driver for SCSI EVS disks, see **Device Types and Usage Instructions**.

Helpful Links

- **Attaching an EVS Disk to an ECS**
- **Introduction to Data Disk Initialization Scenarios and Partition Styles**
- **What Are the Requirements for Attaching an EVS Disk to an ECS?**

12 Network

VPC

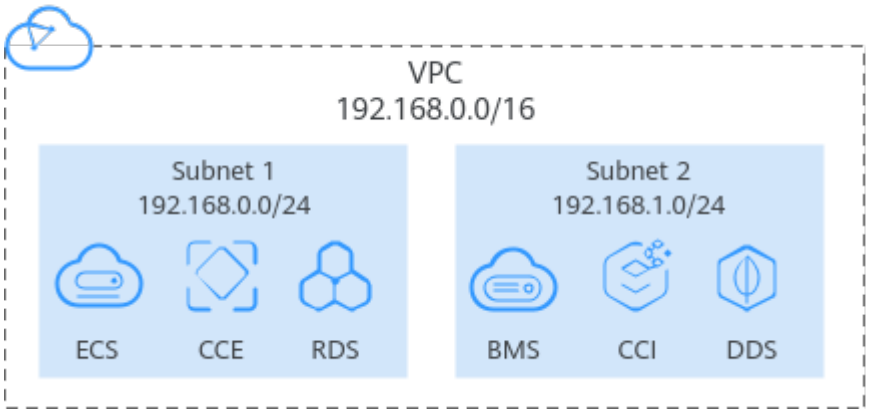
Virtual Private Cloud (VPC) allows you to create customized virtual networks in your logically isolated AZ. Such networks are dedicated zones that are logically isolated, providing secure network environments for your ECSs. You can define security groups, virtual private networks (VPNs), IP address segments, and bandwidth for a VPC. This facilitates internal network configuration and management and allows you to change your network in a secure and convenient network manner. You can also customize the ECS access rules within a security group and between security groups to improve ECS security.

For more information about VPC, see **Virtual Private Cloud User Guide**.

Subnet

A subnet is a range of IP addresses in your VPC and provides IP address management and DNS resolution functions for ECSs in it. The IP addresses of all ECSs in a subnet belong to the subnet.

Figure 12-1 Subnets



By default, ECSs in all subnets of the same VPC can communicate with each other, while ECSs in different VPCs cannot.

Security Group

A security group is a collection of access control rules for ECSs that have the same security protection requirements and that are mutually trusted. By adding an ECS to a security group, you apply all the rules defined for this security group to this ECS.

Your account automatically comes with a default security group. The default security group allows all outbound data, denies all inbound data, and allows all data between ECSs in the group. Your ECSs in the security group can communicate with each other without the need to add rules.

Figure 12-2 Default security group

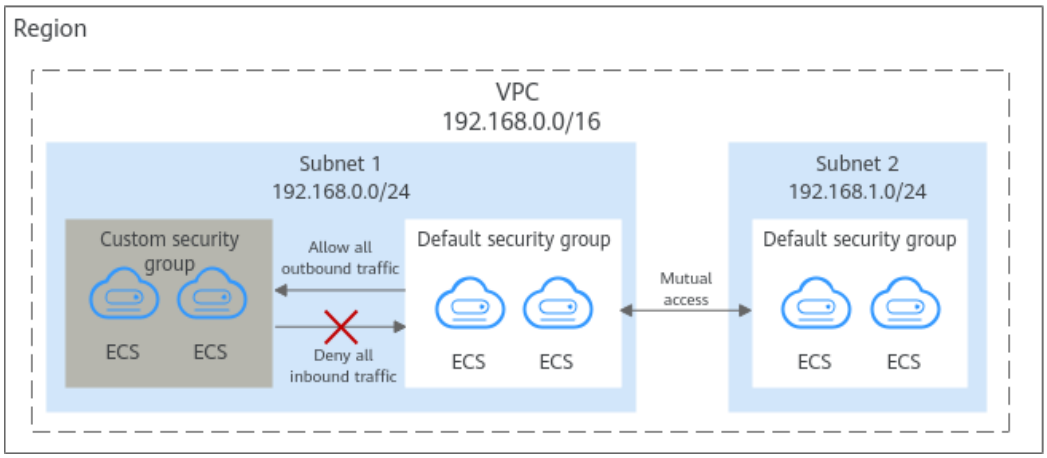


Table 12-1 describes default security group rules.

Table 12-1 Rules in the default security group

Direction	Action	Type	Protocol & Port	Source/ Destination	Description
Inbound	Allow	IPv4	All	Source: default security group (default)	This rule allows IPv4 instances in the security group to communicate with each other using any protocol over any port.
Inbound	Allow	IPv6	All	Source: Default security group (default)	This rule allows IPv6 instances in the security group to communicate with each other using any protocol over any port.
Outbound	Allow	IPv4	All	Destination: 0.0.0.0/0	This rule allows all traffic from the instances in the security group to any IPv4 address over any port.

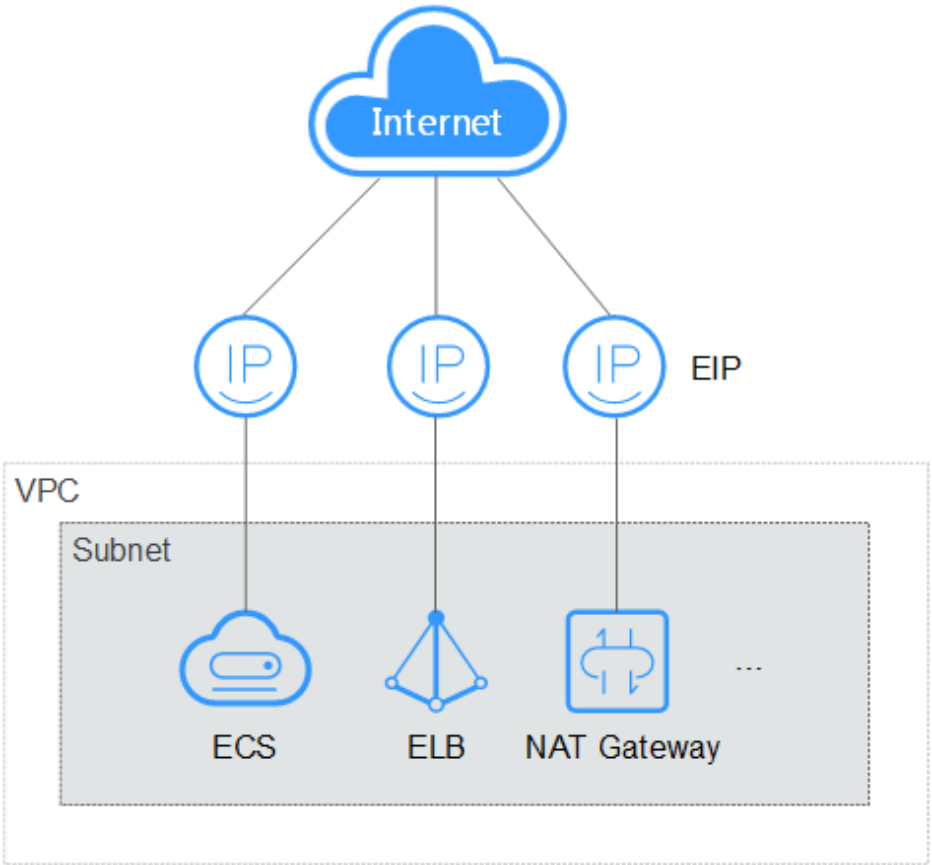
Direction	Action	Type	Protocol & Port	Source/ Destination	Description
Outbound	Allow	IPv6	All	Destination: ::/0	This rule allows all traffic from the instances in the security group to any IPv6 address over any port.

EIP

The Elastic IP (EIP) service enables your cloud resources to communicate with the Internet using static public IP addresses and scalable bandwidths. EIPs can be bound to or unbound from ECSs, BMSs, virtual IP addresses, NAT gateways or load balancers. Various billing modes are provided to meet different service requirements.

Each EIP can be used by only one cloud resource at a time.

Figure 12-3 Accessing the Internet using an EIP



13 Security

13.1 Shared Responsibilities

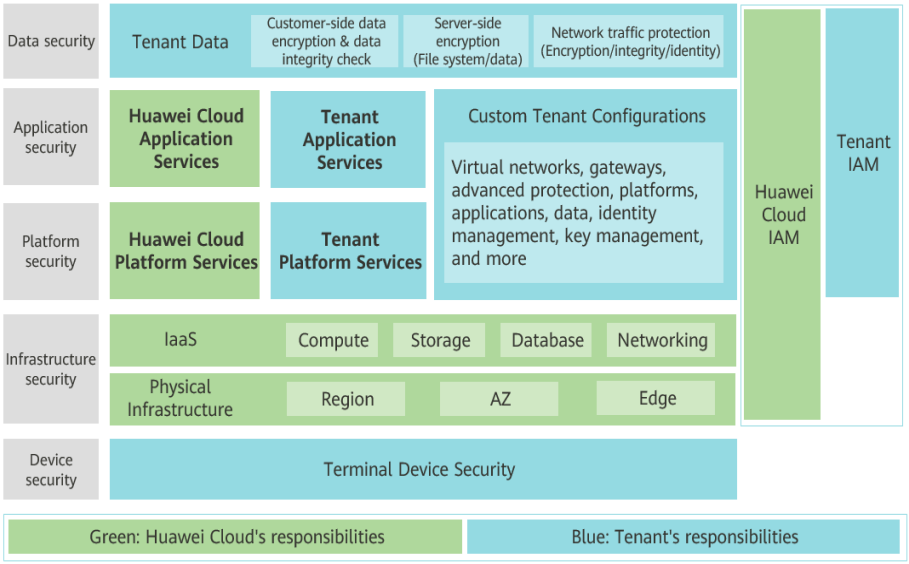
Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system for different regions and industries based on Huawei's unique software and hardware advantages, laws, regulations, industry standards, and security ecosystem.

Figure 13-1 illustrates the responsibilities shared by Huawei Cloud and users.

- **Huawei Cloud**: Ensure the security of cloud services and provide secure clouds. Huawei Cloud's security responsibilities include ensuring the security of our IaaS, PaaS, and SaaS services, as well as the physical environments of the Huawei Cloud data centers where our IaaS, PaaS, and SaaS services operate. Huawei Cloud is responsible for not only the security functions and performance of our infrastructure, cloud services, and technologies, but also for the overall cloud O&M security and, in the broader sense, the security and compliance of our infrastructure and services.
- **Tenant**: Use the cloud securely. Tenants of Huawei Cloud are responsible for the secure and effective management of the tenant-customized configurations of cloud services including IaaS, PaaS, and SaaS. This includes but is not limited to virtual networks, the OS of virtual machine hosts and guests, virtual firewalls, API Gateway, advanced security services, all types of cloud services, tenant data, identity accounts, and key management.

Huawei Cloud Security White Paper elaborates on the ideas and measures for building Huawei Cloud security, including cloud security strategies, the shared responsibility model, compliance and privacy, security organizations and personnel, infrastructure security, tenant service and security, engineering security, O&M security, and ecosystem security.

Figure 13-1 Huawei Cloud shared security responsibility model



13.2 Identity Authentication and Access Control

13.2.1 Access Control for ECS

IAM Identity Authentication

IAM provides fine-grained permissions management, user identity authentication, and resource access control.

You can use your account to create IAM users, and assign permissions to the IAM users to control their access to specific resources. IAM permissions define which actions on your cloud resources are allowed or denied.

- For details about permissions management, see **Permissions Management**.
- For details about how to grant ECS permissions, see **Creating a User and Granting ECS Permissions**.
- For details about custom policies, see **ECS Custom Policies**.
- For details about policies and supported actions, see **Permissions Policies and Supported Actions**.

Project and Enterprise Project

You can group, manage, and isolate resources by project or enterprise project to control resource access and manage permissions by organization like enterprise, department, or project team.

- Project

  Projects in IAM are used to group and isolate OpenStack resources (computing resources, storage resources, and network resources). Resources in your account must be mounted under projects. A project can be a department or a project team. Multiple projects can be created for one account.

- Enterprise Project

  Enterprise projects are used to categorize and manage multiple resources. Resources in different regions can belong to one enterprise project. An enterprise can classify resources based on department or project group and put relevant resources into one enterprise project for management. Resources can be migrated between enterprise projects.

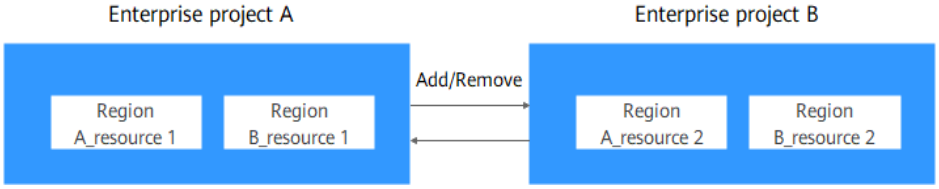
- Differences Between Projects and Enterprise Projects
  - IAM project

    Projects are used to categorize and physically isolate resources in a region. Resources in an IAM project cannot be transferred. They can only be deleted and then rebuilt.

  - Enterprise project

    Enterprise projects provide advanced functions than IAM projects and can be used to group and manage resources of different IAM projects of an enterprise. An enterprise project can contain resources across multiple regions, and resources can be added to or removed from enterprise projects. If you have enabled enterprise management, you cannot create IAM projects anymore and can only manage existing projects. In the future, enterprise projects will replace IAM projects.

  Both projects and enterprise projects can be managed by one or more user groups. Users who manage enterprise projects are in user groups. By attaching a policy to a user group, users in the group can obtain the permissions defined in the policy in the project or enterprise project.

  For details about how to create a project, create an enterprise project, and assign permissions, see **Project and Enterprise Project**.

Access Control

- VPC

  Virtual Private Cloud (VPC) allows you to create customized virtual networks in your logically isolated AZ. Such networks are dedicated zones that are logically isolated, providing secure network environments for your ECSs. You can define security groups, virtual private networks (VPNs), IP address segments, and bandwidth for a VPC. This facilitates internal network configuration and management and allows you to change your network in a secure and convenient network manner. You can also customize the ECS

access rules within a security group and between security groups to improve ECS security.

- Security Group

  A security group is a collection of access control rules for ECSs that have the same security protection requirements and that are mutually trusted. By adding an ECS to a security group, you apply all the rules defined for this security group to this ECS.

For details about how to configure a VPC and security group, see **Step 2: Configure Network**.

Mission-Critical Operation Protection

ECS protects against mission-critical operations. If you want to perform a mission-critical operation on the management console, you must enter a credential for identity verification. You can perform the operation only after your identity is verified. For account security, it is a good practice to enable operation protection. The setting will take effect for both the account and users under the account.

For details about mission-critical operation protection, see **Protection for Mission-Critical Operations**.

13.3 Data Protection

13.3.1 Hypervisor Security

Hypervisor

The hypervisor isolates ECSs running on a physical server to prevent data theft and attacks. You can only access the ECSs allocated to you, including hardware and software resources and data.

CPU Isolation

The x86 architecture supports four privilege levels ranging from ring 0 to ring 3 with privileges in descending order.

- Ring 0: OS kernel
- Ring 1: OS services
- Ring 2: privileged code (user applications with I/O access permissions)
- Ring 3: applications

Each privilege level separately restricts the commands that can be executed.

- The hypervisor runs at ring 0.
- ECS OSs run at ring 1. This prevents the Guest OS from executing privileged instructions.
- Applications run at ring 3, ensuring that they are isolated from the OS.

The introduction of CPU hardware-assisted virtualization further isolates the hypervisor from ECS OSs.

Memory Isolation

The hypervisor uses memory virtualization to isolate the virtual memory of different ECSs. Memory virtualization has introduced layer 3 addressing (virtual guest address into physical guest address and into machine address) based on traditional layer 2 addressing (virtual address into machine address). The process is as follows: An ECS translates its virtual guest address into a physical guest address. Then, the hypervisor translates the physical guest address into a machine address, and sends the machine address to the CPU for processing. This allows the ECS to access only the physical memory allocated it and prevents the ECS from obtaining the machine address.

I/O Isolation

The hypervisor uses a separate device model for I/O virtualization. The frontend transfers the I/O requests from an ECS to the hypervisor backend. The backend parses the requests and sends them to the target device to finish I/O operations. The hypervisor ensures that the ECS can access only the I/O resources allocated to it.

13.3.2 User Encryption

User encryption allows you to use the encryption feature provided on the cloud platform to encrypt ECS resources, improving data security. User encryption includes image encryption and EVS disk encryption.

Image Encryption

Image encryption supports encrypting private images. When creating an ECS, if you select an encrypted image, the system disk of the created ECS is automatically encrypted, improving data security.

Use either of the following methods to create an encrypted image:

- Use an external image file.
- Use an existing encrypted ECS.

For more information about image encryption, see **Encrypting Images**.

EVS Disk Encryption

EVS disk encryption supports system disk encryption and data disk encryption.

- When creating an ECS, if you select an encrypted image, the system disk of the created ECS automatically has encryption enabled, and the encryption mode complies with the image encryption mode.
- When creating an ECS, you can encrypt added data disks.

For more information about EVS disk encryption, see **EVS Encryption**.

Impact on AS

If you use an encrypted ECS to create an Auto Scaling (AS) configuration, the encryption mode of the created AS configuration complies with the ECS encryption mode.

About Keys

The key required for encryption relies on Data Encryption Workshop (DEW). DEW uses a data encryption key (DEK) to encrypt data and uses a customer master key (CMK) to encrypt the DEK.

Figure 13-2 Data encryption process

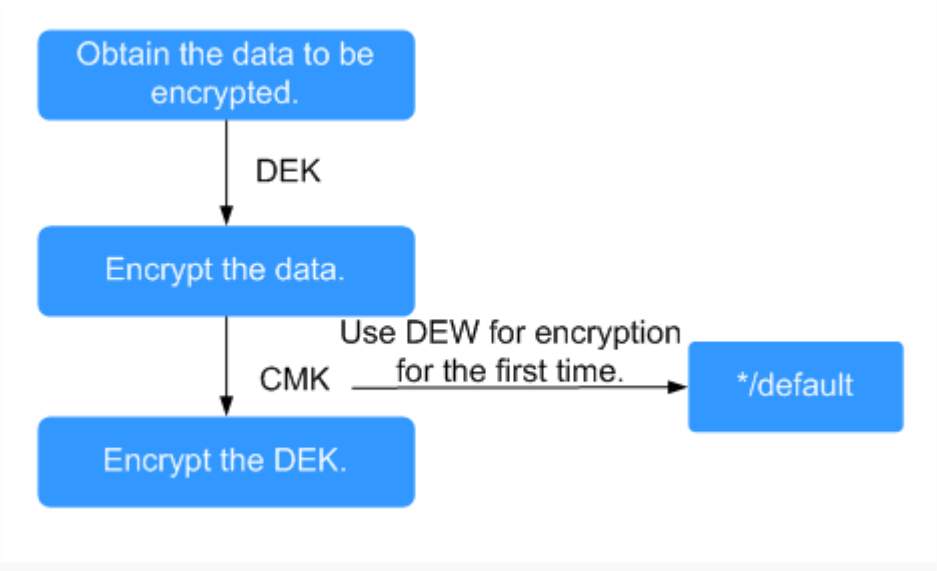


Table 13-1 describes the keys involved in the data encryption process.

Table 13-1 Keys

Name	Description	Function
DEK	An encryption key that is used for encrypting data.	Encrypts specific data.
Custom key	An encryption key created using DEW for encrypting DEKs. A custom key can encrypt multiple DEKs.	Supports CMK disabling and scheduled deletion.
Default key	A master key automatically generated by the system when you use DEW for encryption for the first time. The name extension of a default CMK is **/default**, for example, **evs/default**.	• Supports query of the default key on the DEW console. • Does not support CMK disabling or scheduled deletion.

NOTE

After disabling a CMK or scheduling the deletion of a CMK takes effect, the EVS disk encrypted using this CMK can still be used until the disk is detached from and then attached to an ECS again. During this process, the disk fails to be attached to the ECS because the CMK cannot be obtained, so the EVS disk becomes unavailable.

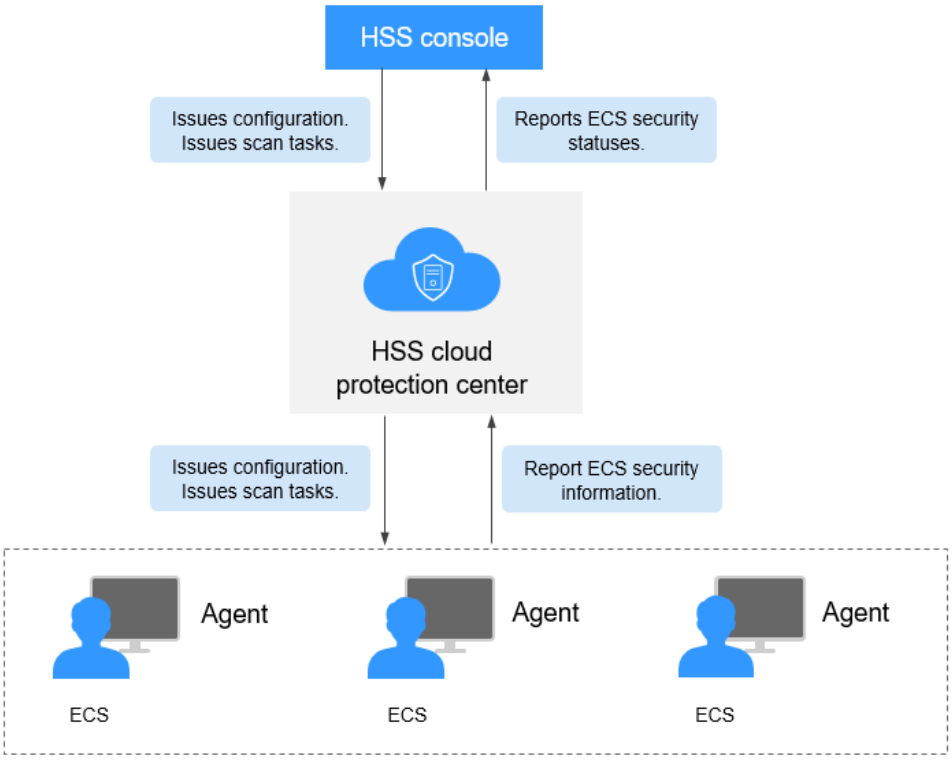
For details about DEW, see ***Data Encryption Workshop User Guide***.

13.3.3 HSS

Host Security Service (HSS) is designed to improve the overall security for ECSs. It reduces intrusion risks with asset management, vulnerability management, intrusion detection, and baseline inspection functions.

After installing the HSS agent on your ECSs, you will be able to check the ECS security status and risks in a region on the HSS console.

Figure 13-3 HSS working rules



The following table describes HSS components.

- HSS console

  A visualized management platform, where you can centrally apply configurations and view the defense status and scan results of ECSs in a region.

- HSS cloud protection center
  - Receives configurations and scan tasks sent from the console and forwards them to agents on the ECSs.

  - Receives ECS information reported by agents, analyzes security risks and exceptions on ECSs, and displays the analysis results on the console.
- Agent
  - Receives detection tasks forwarded by the HSS cloud protection center.
  - Scans ECSs based on task requirements and reports scanning results to the HSS cloud protection center.

Before using the HSS service, install the HSS agent on your ECS. For details, see **Host Security Service**.

13.4 Auditing and Logging

Cloud Trace Service (CTS) is a log audit service for Huawei Cloud security. It allows you to collect, store, and query cloud resource operation records. You can use these records for security analysis, audit compliance, resource tracking, and fault locating.

After CTS is enabled, it can record ECS operations.

- For details about how to enable and configure CTS, see **Enabling CTS**.
- For details about ECS operations that CTS can record, see **Key Operations Supported by CTS**.
- If you want to view traces, see **Viewing Audit Logs**.

13.5 Security Risk Monitoring

You can use server monitoring on Cloud Eye for real-time monitoring, alarms, and notifications of your ECSs. This helps you better understand the performance metrics of your ECSs.

Server monitoring includes basic monitoring, OS monitoring, and process monitoring for servers.

- Basic monitoring provides installation-free monitoring for basic metrics.
- OS monitoring and process monitoring provide system-wide, proactive, and fine-grained monitoring for servers by installing open-source plug-ins on the servers.

For more information, see **Monitoring ECSs**.

13.6 Fault Recovery

Cloud Backup and Recovery (CBR) lets you back up and restore data in case of a failure. If an ECS or EVS disk is faulty or data is deleted accidentally, you can use data backups to quickly restore data.

What Is CBR?

CBR enables you to back up ECSs and EVS disks with ease. If any exceptions occur, such as virus attack, accidental deletion, or software or hardware fault, you can restore data to any point in the past when the data was backed up.

CBR secures your services by ensuring the security and consistency of your data.

Differences Between Cloud Server Backup and Cloud Disk Backup

You can back up ECS data using Cloud Server Backup or Cloud Disk Backup.

- Cloud Server Backup (recommended): Use this backup function if you want to back up the data of all EVS disks (system and data disks) on an ECS. This prevents data inconsistency caused by time difference in creating a backup.
- Cloud Disk Backup: Use this backup function if you want to back up the data of one or more EVS disks (system or data disk) on an ECS. This minimizes backup costs on the basis of data security.

Table 13-2 Differences between cloud server backup and cloud disk backup

Item	Cloud Server Backup	Cloud Disk Backup
Resources to be backed up or restored	All disks (system and data disks) on a server	One or more specified disks (system or data disks)
Recommended scenario	An entire cloud server needs to be protected.	Only data disks need to be backed up, because the system disk does not contain users' application data.
Advantages	All disks on a server are backed up at the same time, ensuring data consistency.	Backup cost is reduced without compromising data security.

Helpful Links

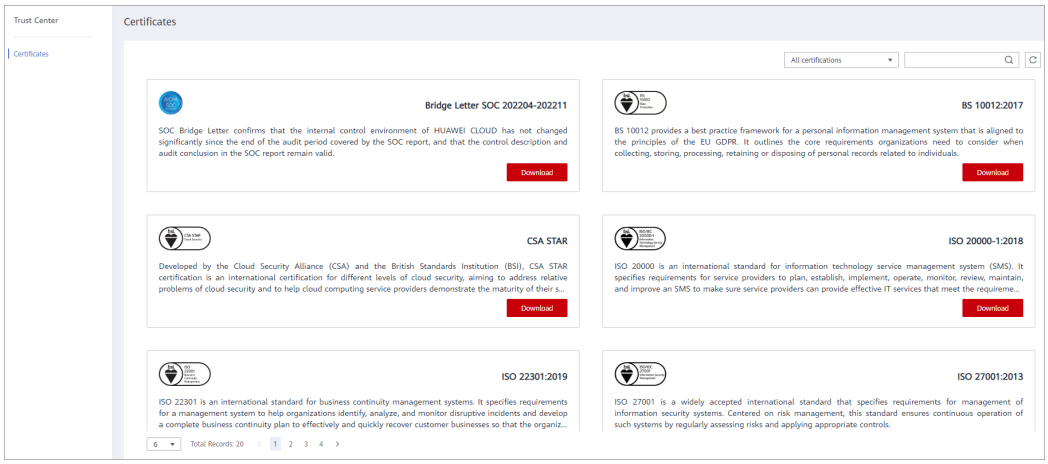
- **Purchasing a Server Backup Vault**
- **Purchasing a Disk Backup Vault**
- **Restoring Data Using a Cloud Server Backup**
- **Using a Backup to Create an Image**
- **Restoring from a Cloud Disk Backup**

13.7 Certificates

Compliance Certificates

Huawei Cloud services and platforms have obtained various security and compliance certifications from authoritative organizations, such as International Organization for Standardization (ISO). You can **download** them from the console.

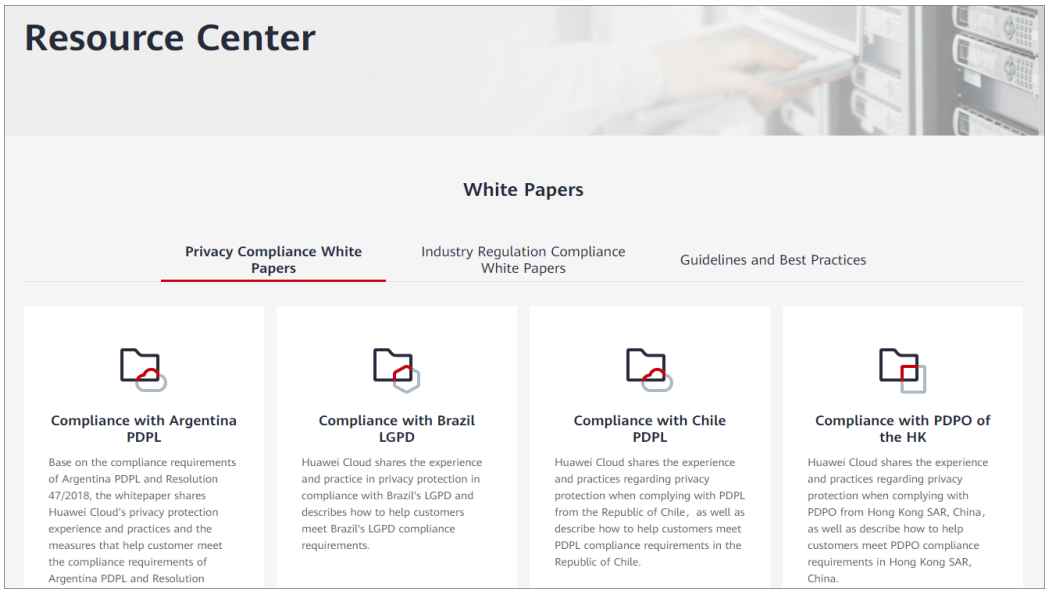
Figure 13-4 Downloading compliance certificates



Resource Center

Huawei Cloud also provides the following resources to help users meet compliance requirements. For details, see **Resource Center**.

Figure 13-5 Resource center



13.8 License Types

BYOL

What Is BYOL?

Bring your own license (BYOL) allows you to use your existing OS license. In such a case, you do not need to apply for a license again.

How to Use BYOL?

If you select the BYOL license type, you are required to manage licenses by yourself. If you have obtained an OS license, you do not need to apply for a license.

The OSs supporting BYOL are as follows:

- Windows

Application Scenarios

The system does not support dynamic license type changing. ECSs support BYOL in the following scenarios:

- Creating an ECS

  After creating an ECS, you cannot change its license type. If the license type must be changed, reinstall or change the ECS OS.
- Reinstalling an ECS OS

  When reinstalling an ECS OS, you can set the license type for the ECS.
- Changing an ECS OS

  When changing an ECS OS, you can set the license type for the ECS.
- Attaching a system disk

  The license type of a system disk is determined by the ECS license type after the ECS is created, the ECS OS is reinstalled, or the ECS OS is changed. If the system disk is detached and then attached to a new ECS or the original ECS, ensure that the ECS license type is the same as the system disk license type.

14 Billing

Billing Items

ECSs are billed based on ECS specifications and the service duration.

Table 14-1 ECS billing

Billing Item	Description
ECS	Pricing is based on the ECS type, flavor (including vCPUs and memory), service duration, and the number of purchased ECSs. For pricing details, see **Elastic Cloud Server Pricing Details**.
Image	Public images of the community edition, such as Linux, are free of charge. Other commercial images, such as Windows images, are billed. **NOTE** If a private image is created using an ECS created from a Marketplace image, you will be billed for the private image based on the Marketplace price.
EVS disk	EVS disks are mandatory. A system disk is 40 GB by default. EVS disks can be billed on a pay-per-use or yearly/monthly basis. For pricing details, see **Elastic Volume Service Pricing Details**. The usage duration of EVS disks should be the same as the associated ECS.
EIP	A public IP address is required for public accessibility. For pricing details, see **Elastic IP Pricing Details**.
Bandwidth	An EIP can be billed by bandwidth or traffic. For pricing details, see **Billed by Bandwidth**.

Billing Modes

An ECS can be billed on a pay-per-use, spot pricing, or yearly/monthly basis.

- Yearly/Monthly: The ECS will be billed based on the service duration. This cost-effective mode is ideal when the duration of ECS usage is predictable.
- Pay-per-use: The ECS will be billed based on usage frequency and duration. This mode is ideal when you want more flexibility and control on ECS usage.
- Spot pricing: The ECS will be billed based on the price that is effective for the time it is being used. This mode is more cost-effective than pay-per-use, and the price will be adjusted based on supply-and-demand changes.

Table 14-2 lists the differences between the billing modes.

Table 14-2 Billing modes

Billing Mode	Yearly/Monthly	Pay-per-Use	Spot Pricing
Payment Method	Prepaid Billed by the purchased duration specified in the order.	Postpaid Billed by service duration.	Postpaid Billed at the market price, which varies according to the changes in supply and demand. The start price of the bill is the market price when the ECS was purchased, and then the ECS is billed at the market price on the hour. **Learn more about spot pricing**
Billing Period	Billed by the purchased duration specified in the order.	Billed by the second and settled by the hour.	Billed by the second and settled by the hour.

Billing for Stopped ECS	Billed by the purchased duration specified in the order, regardless of whether the ECS is stopped or not.	• After a common ECS (without local disks or FPGAs attached) is stopped, basic resources (vCPUs, memory, image, and GPUs) are not billed. Other resources (EVS disks, EIPs, and bandwidth) associated with the ECS will continue to be billed. • An ECS with local disks attached, an FPGA-based ECS, or a BMS will continue to generate costs even after being stopped. To stop the ECS from being billed, delete it and its associated resources.	• After a common ECS (without local disks or FPGAs attached) is stopped, basic resources (vCPUs, memory, image, and GPUs) are not billed. Other resources (EVS disks, EIPs, and bandwidth) associated with the ECS will continue to be billed. • An ECS with local disks attached, an FPGA-based ECS, or a BMS will continue to generate costs even after being stopped. To avoid being billed for such an ECS, delete it and its associated resources.
Billing Mode Change	Can be changed to pay-per-use. **Changing Yearly/ Monthly to Pay-per-Use**	Can be changed to yearly/monthly. **Changing the Billing Mode from Pay-per-Use to Yearly/ Monthly**	Cannot be changed to pay-per-use or yearly/ monthly.
Specification Modification	Supported	Supported	Not supported

Application Scenarios	This cost-effective mode is ideal when the duration of ECS usage is predictable. The yearly/monthly mode is recommended for long-term users.	This mode is ideal when you want more flexibility and control on ECS usage.	Spot ECSs can be reclaimed at any time and are suitable for stateless, fault-tolerant instances that are not sensitive to interruptions.

- **Yearly/Monthly**: This mode provides a larger discount than pay-per-use and is recommended for long-term users. A yearly/monthly ECS is billed based on the purchased duration specified in the order.
- **Pay-per-use**: a flexible mode with the billing accurately down to the second.

  An ECS is billed from the time when it is provisioned to the time when it is deleted.

  Common ECSs refer to ECSs without local disks or FPGAs attached. After a common ECS is stopped, it is billed as follows:

  – ECS basic resources (vCPUs, memory, image, and GPUs) no longer generate costs. Its associated resources such as its EVS disks, EIPs, and bandwidth will continue to be billed.

  – When you try to start the ECS the next time, the system will allocate vCPUs and memory again, but if resources are insufficient, the startup may fail. In this case, you can try again later or resize the ECS specifications first before trying to start it.

  Special pay-per-use ECSs will continue to be billed after being stopped and its resources such as vCPUs and memory are still retained.

  NOTE

  Special ECSs include:

  - BMSs
  - ECSs attached with local disks, such as disk-intensive ECSs and ultra-high I/O ECSs
  - FPGA-based ECSs

  To stop billing for special ECSs, delete them and their associated resources.

- **Spot pricing**

  Price: Spot ECSs are billed based on the market price, which varies according to the changes in supply and demand. The maximum price you are willing to pay is not used as a billing basis. A higher price ensures a greater success rate for you to purchase such an ECS. A spot ECS can be used only when the market price is lower than the maximum price you are willing to pay and inventory resources are sufficient. When the market price exceeds the maximum price, the ECS will be reclaimed.

Billing period: A spot ECS is billed by the second. A bill is generated on the hour. The start price of the bill is the market price when the ECS was purchased, and the market price of the hour is used for billing.

Associated services: Spot pricing applies only to vCPUs and memory. The OS, system disk, data disk, bandwidth, and IP address are billed following the billing rules for these items in pay-per-use billing mode. A system disk is created and released with the ECS to which the system disk is attached. A data disk must be manually deleted.

Coupons: Coupons are not applicable to spot ECSs.

Billing Examples

In both pay-per-use and spot pricing billing modes, ECSs are billed by the second. The price per second of each type of ECS can be obtained by dividing their hourly price by 3600. Obtain the hourly price on the **Product Pricing Details** page.

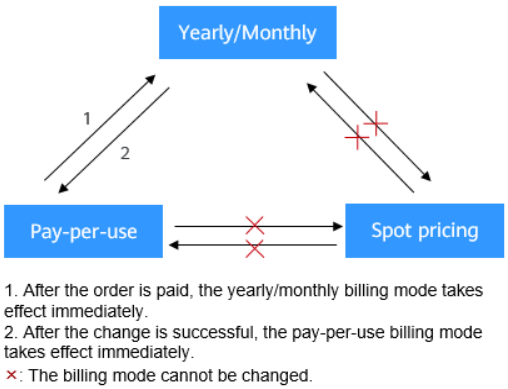
For example, if you purchase a pay-per-use ECS priced $0.68 USD/hour, the ECS will be billed based on the usage duration by the second.

- If you use the ECS for 30 minutes, you need to pay for $0.34 USD (0.68/3600 x 30 x 60).
- If you use the ECS for 1 hour and 30 minutes, you need to pay for $1.02 USD (0.68/3600 x 90 x 60).

Configuration Changes

- Changing the billing mode
  - Changing from pay-per-use to yearly/monthly: After the billing mode of an ECS is changed from pay-per-use to yearly/monthly, a new order is then generated for you, and the new billing mode takes effect immediately after you pay for the order.
  - Changing from yearly/monthly to pay-per-use: After the billing mode is changed from yearly/monthly to pay-per-use, the pay-per-use billing mode takes effect immediately.
  - A spot ECS cannot be changed to a pay-per-use or yearly/monthly ECS.

Figure 14-1 ECS billing mode change



- Modifying ECS specifications

  For an ECS billed on a yearly/monthly or pay-per-use basis, you can modify its specifications (vCPUs and memory). However, a spot ECS does not support specifications modification.

  Notes

  - Vouchers will not be refunded if the specifications of the ECS purchased with those vouchers are downgraded.
  - If ECS specifications are upgraded, the price difference between the original and new specifications must be returned according to the in-service duration.
    - For pay-per-use ECSs: The specification modifications take effect immediately.
    - For yearly/monthly ECSs: The specification modifications take effect immediately within the original validity period. For details about the price difference, see **Pricing of a Changed Specification**.
  - ECS specifications (vCPU or memory) degrade deteriorates the ECS performance.
  - The price difference must be reimbursed if a downgraded ECS needs to be upgraded back to its original specifications.

Helpful Links

- **What Are the Differences Between Yearly/Monthly and Pay-per-Use Billing Modes?**
- **Will Am I Continue to Be Billed After ECSs Are Stopped?**
- **Can I Switch Between Yearly/Monthly and Pay-per-Use Payments?**
- **FAQs About ECS Frozen, Deletion, and Unsubscription**
- **How Can I Stop an ECS from Being Billed?**
- **FAQs About Spot ECSs**

15 Permissions Management

If you need to assign different permissions to employees in your enterprise to access your ECS resources, IAM is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you secure access to your resources.

With IAM, you can use your account to create IAM users, and assign permissions to the users to control their access to specific resources. For example, some software developers in your enterprise need to use ECS resources but should not be allowed to delete the resources or perform any other high-risk operations. In this scenario, you can create IAM users for the software developers and grant them only the permissions required for using ECS resources.

If your account does not need individual IAM users for permissions management, skip this section.

IAM is a free service. You pay only for the resources in your account. For more information about IAM, see **IAM Service Overview**.

ECS Permissions

By default, new IAM users do not have permissions assigned. You need to add a user to one or more groups, and attach permissions policies or roles to these groups. Users inherit permissions from the groups to which they are added and can perform specified operations on cloud services based on the permissions.

ECS is a project-level service deployed and accessed in specific physical regions. To assign ECS permissions to a user group, specify the scope as region-specific projects and select projects (such as **ap-southeast-2** for the **AP-Bangkok** region) for the permissions to take effect. If you select **All projects**, the permissions will take effect for user groups in all region-specific projects. When accessing ECS, the users need to switch to a region where they have got permissions to use this service.

You can grant users permissions by using roles and policies.

- Roles: A type of coarse-grained authorization mechanism that defines permissions related to user responsibilities. This mechanism provides only a limited number of service-level roles for authorization. When using roles to grant permissions, you need to also assign other roles which the permissions depend on to take effect. However, roles are not an ideal choice for fine-grained authorization and secure access control.

- Policies: A fine-grained authorization strategy that defines permissions required to perform operations on specific cloud resources under certain conditions. This mechanism allows for more flexible policy-based authorization, meeting requirements for secure access control. For example, you can grant ECS users only the permissions for managing a certain type of ECSs.

  Most policies define permissions based on APIs. For the API actions supported by ECS, see **Permissions Policies and Supported Actions**.

Table 15-1 lists all the system policies supported by ECS.

Table 15-1 System-defined permissions for ECS

Policy/Role Name	Description	Type	Policy Content
ECS FullAccess	Administrator permissions for ECS. Users granted these permissions can perform all operations on ECSs, including creating, deleting, and viewing ECSs, and modifying ECS specifications.	System-defined policy	**ECS FullAccess Policy Content**
ECS CommonOperations	Common user permissions for ECS. Users granted these permissions can start, stop, restart, and query ECSs.	System-defined policy	**ECS CommonOperations Policy Content**
ECS ReadOnlyAccess	Read-only permissions for ECS. Users granted these permissions can only view ECS data.	System-defined policy	**ECS ReadOnlyAccess Policy Content**
Server Administrator	Full permissions for ECS. This role must be used together with the **Tenant Guest** role in the same project. If a user needs to create, delete, or change resources of other services, the user must also be granted administrator permissions of the corresponding services in the same project. For example, if a user needs to create a new VPC when creating an ECS, the user must also be granted permissions with the **VPC Administrator** role.	System role	**Server Administrator Policy Content**

Table 15-2 lists the common operations supported by each system-defined policy of ECS. Select the policies as required.

Table 15-2 Common operations supported by each system-defined policy

Operation	ECS FullAccess	ECS CommonOperations	ECS ReadOnlyAccess
Creating an ECS	Supported	Not supported	Not supported
Remotely logging in to an ECS on the management console	Supported	Supported	Not supported (VNC login not supported)
Querying an ECS list	Supported	Supported	Supported
Querying ECS details	Supported	Supported	Supported
Modifying ECS details	Supported	Not supported	Not supported
Starting an ECS	Supported	Supported	Not supported
Stopping an ECS	Supported	Supported	Not supported
Restarting an ECS	Supported	Supported	Not supported
Deleting an ECS	Supported	Not supported	Not supported
Reinstalling an ECS OS	Supported	Not supported	Not supported
Changing an ECS OS	Supported	Not supported	Not supported
Attaching a disk to an ECS	Supported	Not supported	Not supported
Detaching a disk from an ECS	Supported	Not supported	Not supported
Querying a disk list	Supported	Supported	Supported
Attaching a NIC to an ECS	Supported	Not supported	Not supported
Detaching a NIC from an ECS	Supported	Not supported	Not supported
Querying a NIC list	Supported	Supported	Supported
Adding tags to an ECS	Supported	Supported	Not supported
Modifying ECS specifications	Supported	Not supported	Not supported
Querying the ECS flavor list	Supported	Supported	Supported
Querying ECS groups	Supported	Supported	Supported

Role/Policy Dependencies of the ECS Console

Table 15-3 Role/Policy dependencies of the ECS console

Console Function	Dependency	Role/Policy Required
ECS host security	Host Security Service (HSS)	To view host security information, an IAM user must be granted ECS FullAccess and HSS ReadOnlyAccess.
ECS console overview	Dedicated Host (DeH)	To view existing DeHs, an IAM user must be granted ECS FullAccess and DeH ReadOnlyAccess.
ECS purchase	Tag Management Service (TMS)	To view predefined tags, an IAM user must be granted ECS FullAccess and TMS ReadOnlyAccess.
ECS monitoring	Cloud Eye	To view ECS monitoring metrics, an IAM user must be granted ECS FullAccess and CES ReadOnlyAccess.

Helpful Links

- **IAM Service Overview**
- **Creating a User and Granting ECS Permissions**
- **Permissions Policies and Supported Actions** in *Elastic Cloud Server API Reference*

ECS FullAccess Policy Content

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "ecs:*:*",
                "evs:*:get",
                "evs:*:list",
                "evs:volumes:create",
                "evs:volumes:delete",
                "evs:volumes:attach",
                "evs:volumes:detach",
                "evs:volumes:manage",
                "evs:volumes:update",
                "evs:volumes:use",
                "evs:volumes:uploadImage",
                "evs:snapshots:create",
                "vpc:*:get",
                "vpc:*:list",
                "vpc:networks:create",
                "vpc:networks:update",
                "vpc:subnets:update",
                "vpc:subnets:create",
                "vpc:ports:*",
                "vpc:routers:get",
                "vpc:routers:update",
```



```
                "vpc:securityGroups:*",
                "vpc:securityGroupRules:*",
                "vpc:floatingIps:*",
                "vpc:publicIps:*",
                "ims:images:create",
                "ims:images:delete",
                "ims:images:get",
                "ims:images:list",
                "ims:images:update",
                "ims:images:upload"
            ]
        }
    ]
}
```

ECS CommonOperations Policy Content

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "ecs:*:get*",
                "ecs:*:list*",
                "ecs:*:start",
                "ecs:*:stop",
                "ecs:*:reboot",
                "ecs:blockDevice:use",
                "ecs:cloudServerFpgaImages:relate",
                "ecs:cloudServerFpgaImages:register",
                "ecs:cloudServerFpgaImages:delete",
                "ecs:cloudServerFpgaImags:unrelate",
                "ecs:cloudServers:setAutoRecovery",
                "ecs:cloudServerPasswords:reset",
                "ecs:cloudServerPorts:modify",
                "ecs:cloudServers:vnc",
                "ecs:diskConfigs:use",
                "ecs:securityGroups:use",
                "ecs:serverGroups:manage",
                "ecs:serverFloatingIps:use",
                "ecs:serverKeypairs:*",
                "ecs:serverPasswords:manage",
                "ecs:servers:createConsole",
                "ecs:servers:createImage",
                "ecs:servers:setMetadata",
                "ecs:servers:setTags",
                "ecs:serverVolumes:use",
                "evs:*:get*",
                "evs:*:list*",
                "evs:snapshots:create",
                "evs:volumes:uploadImage",
                "evs:volumes:delete",
                "evs:volumes:update",
                "evs:volumes:attach",
                "evs:volumes:detach",
                "evs:volumes:manage",
                "evs:volumes:use",
                "vpc:*:get*",
                "vpc:*:list*",
                "vpc:floatingIps:create",
                "vpc:floatingIps:update",
                "vpc:floatingIps:delete",
                "vpc:publicIps:update",
                "vpc:publicIps:delete",
                "ims:images:create",
                "ims:images:delete",
                "ims:images:get",
                "ims:images:list",
```



```
                "ims:images:update",
                "ims:images:upload"
            ]
        }
    ]
}
```

ECS ReadOnlyAccess Policy Content

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "ecs:*:get*",
                "ecs:*:list*",
                "ecs:serverGroups:manage",
                "ecs:serverVolumes:use",
                "evs:*:get*",
                "evs:*:list*",
                "vpc:*:get*",
                "vpc:*:list*",
                "ims:*:get*",
                "ims:*:list*"
            ]
        }
    ]
}
```

Server Administrator Policy Content

```
{
  "Version": "1.1",
  "Statement": [
    {
      "Action": [
        "ecs:*:*",
        "evs:*:get",
        "evs:*:list",
        "evs:volumes:create",
        "evs:volumes:delete",
        "evs:volumes:attach",
        "evs:volumes:detach",
        "evs:volumes:manage",
        "evs:volumes:update",
        "evs:volumes:uploadImage",
        "evs:snapshots:create",
        "vpc:*:get",
        "vpc:*:list",
        "vpc:networks:create",
        "vpc:networks:update",
        "vpc:subnets:update",
        "vpc:subnets:create",
        "vpc:routers:get",
        "vpc:routers:update",
        "vpc:ports:*",
        "vpc:privateIps:*",
        "vpc:securityGroups:*",
        "vpc:securityGroupRules:*",
        "vpc:floatingIps:*",
        "vpc:publicIps:*",
        "vpc:bandwidths:*",
        "vpc:firewalls:*",
        "ims:images:create",
        "ims:images:delete",
        "ims:images:get",
        "ims:images:list",
        "ims:images:update",
```



```
            "ims:images:upload"
        ],
        "Effect": "Allow"
    }
  ]
}
```


16 CPU Credits

Concept

CPU credits measure computing, storage, and network resource usage of an ECS. ECSs use CPU credits to ensure baseline performance, preventing issues caused by CPU overcommitment.

CPU-credit-based ECSs are suitable for the applications requiring baseline level of vCPU performance generally and burstable performance in case of traffic bursts.

General computing-basic ECSs run based on CPU credits (do not incur additional costs). For more details, see **General Computing-Basic ECSs**.

Working Rules

After a CPU-credit-based ECS is created, the cloud platform automatically allocates initial CPU credits to the ECS for its burstable performance.

After the ECS runs, its credits are accrued or spent. When the actual computing performance of the ECS is higher than the baseline CPU performance, the CPU credits are spent to meet the performance requirements. When the actual computing performance is lower than the baseline CPU performance, the CPU credits are accrued until the CPU credit balance limit is reached.

NOTE

- CPU credits can be accrued. However, after the credits reach the CPU credit balance limit, any new credits that are earned will be discarded.
- Initial credits are not counted in the CPU credit balance limit.
- When an ECS starts to spend CPU credits, it preferentially uses the initial CPU credits.
- One CPU credit is equal to one vCPU running at 100% usage for one minute.
- When the actual computing performance is higher than the baseline performance, the accrued credits are spent until they are used up. Then, the actual computing performance cannot exceed the baseline performance.

Related Terms

Table 16-1 Terms related to CPU credits (taking a T6 ECS as an example)

Term	Description	Example
Initial CPU credits	After a T6 ECS is created, the cloud platform automatically allocates CPU credits to this ECS. These credits are initial CPU credits. Initial CPU credits are allocated only after an ECS is created.	After a t6.large.1 is created, it has 60 initial CPU credits.
CPU credit balance limit	When the actual computing performance is lower than the baseline CPU performance, the CPU credits are accrued. The accrued credits will not expire on a running ECS. When the credits reach the maximum value allowed, which is specified by the CPU credit balance limit, any new credits that are earned will be discarded. The CPU credit balance limit varies depending on ECS flavors.	The CPU credit balance limit for a t6.large.1 ECS is 576. When its accrued CPU credits reach 576, no more credits will be accrued. When its accrued CPU credits are smaller than 576, the CPU credits can be accrued again.
CPU credit earn rate (credits/hour)	The number of CPU credits earned by an ECS per hour, which corresponds to CPU baseline. One CPU credit is equal to one vCPU running at 100% usage for one minute.	The CPU credit earn rate of a t6.large.1 ECS is 24, indicating that a t6.large.1 ECS can earn 24 CPU credits per hour.
CPU baseline (%)	When the number of CPU credits that an ECS spends per minute is the same as the number of CPU credits that the ECS earns per minute, the ECS runs at the CPU baseline.	The CPU baseline of a t6.large.1 ECS is 40%. When the actual computing performance of a t6.large.1 ECS reaches 40%, the number of credits spent by the ECS per minute is the same as the number of credits earned by the ECS per minute.

Term	Description	Example
Average CPU baseline (%)	When an ECS runs at CPU baseline, the computing performance of each vCPU is the average CPU baseline, which is calculated using the following formula: **Average CPU baseline = CPU baseline/Number of vCPUs**	The CPU baseline of a t6.large.1 ECS is 40%, and the ECS has two vCPUs. Then, the average CPU baseline is 20%.
Spent CPU credits	When the actual computing performance of an ECS is higher than the baseline CPU performance, the CPU credits are spent to meet the performance requirements. One CPU credit is spent for one vCPU running at 100% usage for one minute. The formula for calculating the CPU credits spent per minute is as follows: **Number of CPU credits spent per minute = 1 CPU credit x Actual computing performance**	When a t6.large.1 ECS runs at the computing performance of 20% for one minute, the ECS spends 0.2 CPU credits.

Term	Description	Example
Accrued CPU credits	• When the actual computing performance of an ECS is less than the baseline CPU performance, the number of CPU credits spent per minute is smaller than the number of CPU credits earned per minute. Therefore, the remaining CPU credits are accrued until the CPU credit balance limit is reached. • When the actual computing performance is higher than the baseline CPU performance, the number of CPU credits spent per minute is greater than the number of CPU credits earned per minute. In such a case, the ECS spends accrued CPU credits (initial CPU credits preferentially used) to comply with burstable CPU performance. The formula for calculating the number of CPU credits accrued per minute is as follows: **Number of CPU credits accrued per minute = 1 CPU credit x (CPU baseline – Actual computing performance)**	The CPU baseline of a t6.large.1 ECS is 40%. When the actual computing performance of the ECS is 10%, the ECS accrues 0.3 CPU credits per minute.

Impact of CPU Credits After an ECS Is Stopped

The change of CPU credits varies depending on the ECS billing mode and network type.

Table 16-2 Billing modes and CPU credits

Billing Mode	CPU Credit Change After an ECS Is Stopped
Yearly/Monthly	The existing CPU credits are retained and accrued until the CPU credit balance limit is reached.
Pay-per-use	The existing CPU credits are retained but not accrued.
Spot price	The existing CPU credits are retained but not accrued.

17 Region and AZ

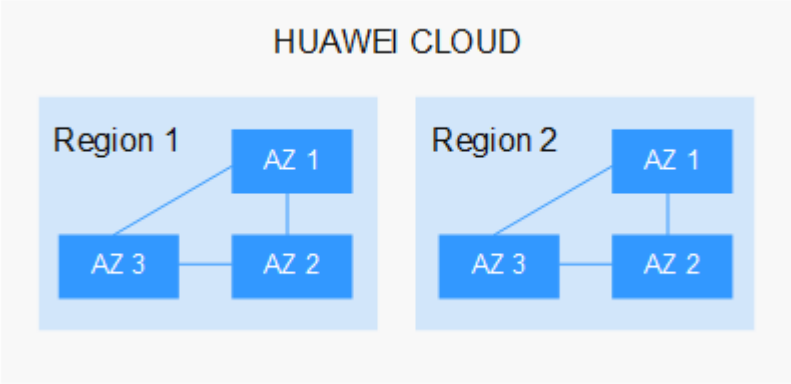
Concept

A region and availability zone (AZ) identify the location of a data center. You can create resources in a specific region and AZ.

- Regions are divided based on geographical location and network latency. Public services, such as Elastic Cloud Server (ECS), Elastic Volume Service (EVS), Object Storage Service (OBS), Virtual Private Cloud (VPC), Elastic IP (EIP), and Image Management Service (IMS), are shared within the same region. Regions are classified into universal regions and dedicated regions. A universal region provides universal cloud services for common tenants. A dedicated region provides specific services for specific tenants.
- An AZ contains one or more physical data centers. Each AZ has independent cooling, fire extinguishing, moisture-proof, and electricity facilities. Within an AZ, computing, network, storage, and other resources are logically divided into multiple clusters. AZs within a region are interconnected using high-speed optical fibers, to support cross-AZ high-availability systems.

Figure 17-1 shows the relationship between regions and AZs.

Figure 17-1 Regions and AZs



Huawei Cloud provides services in many regions around the world. You can select a region and an AZ based on requirements. For more information, see **Huawei Cloud Global Regions**.

Selecting a Region

When selecting a region, consider the following factors:

- Location

  It is recommended that you select the closest region for lower network latency and quick access.

  - If your target users are in Asia Pacific (excluding the Chinese mainland), select the **CN-Hong Kong**, **AP-Bangkok**, or **AP-Singapore** region.
  - If your target users are in Africa, select the **AF-Johannesburg** region.
  - If your target users are in Latin America, select the **LA-Santiago** region.

    NOTE

    The **LA-Santiago** region is located in Chile.

- Resource price

  Resource prices may vary in different regions. For details, see **Product Pricing Details**.

Selecting an AZ

When deploying resources, consider your applications' requirements on disaster recovery (DR) and network latency.

- For high DR capability, deploy resources in different AZs within the same region.
- For lower network latency, deploy resources in the same AZ.

Regions and Endpoints

Before you use an API to call resources, specify its region and endpoint. For more details, see **Regions and Endpoints**.

18 Change History

Released On	Description
2024-04-15	This issue is the thirty-ninth official release. Added D7i ECSs in **Ultra-high I/O ECSs**.
2024-04-08	This issue is the thirty-eighth official release. Added C7h ECSs in **General Computing-plus ECSs**.
2024-03-25	This issue is the thirty-seventh official release. Added C7t ECSs in **General Computing-plus ECSs**.
2023-11-02	This issue is the thirty-sixth official release. Added C6h ECSs in **General Computing-plus ECSs**.
2023-10-26	This issue is the thirty-fifth official release. Deleted the ECS PartnerOperations system-defined policy in **Permissions Management**.
2023-09-28	This issue is the thirty-fourth official release. Modified the following content: • Added aC7 ECSs in **General Computing-plus ECSs**. • Added aM7 ECSs in **Memory-optimized ECSs**. • Added aI7 ECSs in **Ultra-high I/O ECSs**. • Added Ir7n and I7n ECSs in **Ultra-high I/O ECSs**.
2023-05-31	This issue is the thirty-third official release. Modified the following content: Modified billing descriptions for stopped ECSs in **Billing**.

Released On	Description
2023-04-20	This issue is the thirty-second official release. Modified the following content: • Added S7 and S7n ECSs in **General Computing ECSs**. • Added C7 ECSs in **General Computing-plus ECSs**. • Added M7 and M7n ECSs in **Memory-optimized ECSs**. • Added E7 ECSs in **Large-Memory ECSs**. • Added D7 ECSs in **Disk-intensive ECSs**. • Added I7 and Ir7 ECSs in **Ultra-high I/O ECSs**. Added the following content: • **AI-accelerated ECSs** • **Kunpeng Memory-optimized ECSs** • **Kunpeng Ultra-high I/O ECSs** • **Kunpeng AI Inference-accelerated ECSs**
2022-11-15	This issue is the thirty-first official release. Added the following content: • **Shared Responsibilities** • **Access Control for ECS** • **Data Protection** • **Auditing and Logging** • **Security Risk Monitoring** • **Certificates** Modified the following content: **Fault Recovery**
2022-10-31	This issue is the thirtieth official release. Added C7n ECSs in **General Computing-plus ECSs**.
2022-09-06	This issue is the twenty-ninth official release. Modified the method of handling damaged local disks in **Ultra-high I/O ECSs**.
2022-08-31	This issue is the twenty-eighth official release. Added the ECS PartnerOperations system policy in **Permissions Management**.
2022-08-16	This issue is the twenty-seventh official release. Added IPv6 support in **Kunpeng General Computing-plus ECSs**.
2022-06-17	This issue is the twenty-sixth official release. Added descriptions of x86 and Kunpeng architectures in **ECS Types**.

Released On	Description
2022-06-14	This issue is the twenty-fifth official release. Added constraints on local disks attached to Ir3 ECSs in **Ultra-high I/O ECSs**.
2022-05-16	This issue is the twenty-fourth official release. • Added Ir3 ECSs in **Ultra-high I/O ECSs**. • Added IPv6 support.
2022-03-25	This issue is the twenty-third official release. Added the differences between dedicated and shared ECSs in **ECS Types**.
2021-09-02	This issue is the twenty-second official release. • Added ECS overview in section "x86 ECS Specifications." • Added **Fault Recovery**. • Modified the figure showing the relationship between ECS and other services in **ECS and Other Services**.
2021-06-17	This issue is the twenty-first official release. Added P2s ECSs in **GPU-accelerated ECSs**.
2021-03-18	This issue is the twentieth official release. Added E3 flavors e3.14xlarge.12, e3.26xlarge.14, e3.52xlarge.14, and e3.52xlarge.20 in **Large-Memory ECSs**.
2021-01-20	This issue is the nineteenth official release. • Changed the maximum/assured bandwidth of I3 ECSs in **Ultra-high I/O ECSs**. • Added the number of CUDA cores supported by each GPU and single-GPU performance in **GPU-accelerated ECSs**.
2020-11-02	This is the eighteenth official release. Added **Hypervisor Security**.
2020-08-31	This issue is the seventeenth official release. Adjusted the manual structure to separately describe x86 and Kunpeng ECSs in **x86 ECS Specifications and Types** and **Kunpeng ECS Specifications and Types**.
2020-07-06	This issue is the sixteenth official release. Added C6s ECSs in **General Computing-plus ECSs**.
2020-06-30	This issue is the fifteenth official release. • Added C3ne ECSs in **General Computing-plus ECSs**. • Added M3ne ECSs in **Memory-optimized ECSs**.
2020-06-29	This issue is the fourteenth official release. • Added Pi2 ECSs in **GPU-accelerated ECSs**.

Released On	Description
2020-03-23	This issue is the thirteenth official release. • Added i3.16xlarge.8 in **Ultra-high I/O ECSs**. • Added **Kunpeng General Computing-plus ECSs**. • Added **Billing**. • Added G5 ECSs in **GPU-accelerated ECSs**.
2020-01-20	This issue is the twelfth official release. • Added S6 ECS specifications in **General Computing ECSs**. • Added C6 ECS specifications in **General Computing-plus ECSs**. • Added M6 ECSs in **Memory-optimized ECSs**. • Added **A Summary List of x86 ECS Specifications**.
2019-11-15	This issue is the eleventh official release. • Changed Intel Xeon Cascade Lake CPUs to second-generation Intel® Xeon® Scalable processors. • Changed Intel Xeon Skylake CPUs to Intel® Xeon® Scalable processors.
2019-10-28	This issue is the tenth official release. Added **GPU-accelerated ECSs**.
2019-10-24	This issue is the ninth official release. • Added **General Computing-Basic ECSs**. • Added **CPU Credits**.
2019-10-16	This issue is the eighth official release. • Added **Ultra-high I/O ECSs**. • Moved "Spot ECSs" and "Reserved Instances" to User Guide.
2019-09-06	This issue is the seventh official release. • Added spot ECSs. • Modified **Region and AZ**.
2019-07-12	This issue is the sixth official release. • Added **ECS Advantages**. • Added **ECS Application Scenarios**. • Added "Why ECS" in **What Is ECS?** • Modified the ECS architecture in **What Is ECS?** • Optimized the document structure. • Deleted API statuses in **ECS Lifecycle**.
2019-06-24	This issue is the fifth official release. • Added **Notes and Constraints on Using ECSs**. • Modified **Region and AZ**.

Released On	Description
2019-05-07	This issue is the fourth official release. Modified the following content: • Added the newly released c3.6xlarge.2, c3.8xlarge.2, and c3.15xlarge.2 flavors in **General Computing-plus ECSs**. • Added the newly released d2.2xlarge.8, d2.4xlarge.8, d2.6xlarge.8, d2.8xlarge.8, and d2.12xlarge.8 flavors in **Disk-intensive ECSs**.
2019-04-09	This issue is the third official release. Modified the following content: Added the newly released m3.15xlarge.8 flavor in **Memory-optimized ECSs**.
2019-03-04	This issue is the second official release. • Added reserved instances. • Modified **ECS and Other Services**.
2018-11-19	This issue is the first official release.

