

# HUAWEI CLOUD O&M Basics



# Foreword

- HUAWEI CLOUD not only provides resource services to meet enterprise needs to migrate their service systems to the cloud, but also ensures the normal running of the service systems on the cloud to meet the enterprise governance requirements.
- This section will help you understand HUAWEI CLOUD O&M.

# Objectives

- Upon completion of this course, you will:
  - Gain basic knowledge about O&M, monitoring, and auditing.
  - Understand the positioning, principles, and usage of common governance services on HUAWEI CLOUD.

# Contents

## **1. O&M Basic Concepts and Principles**

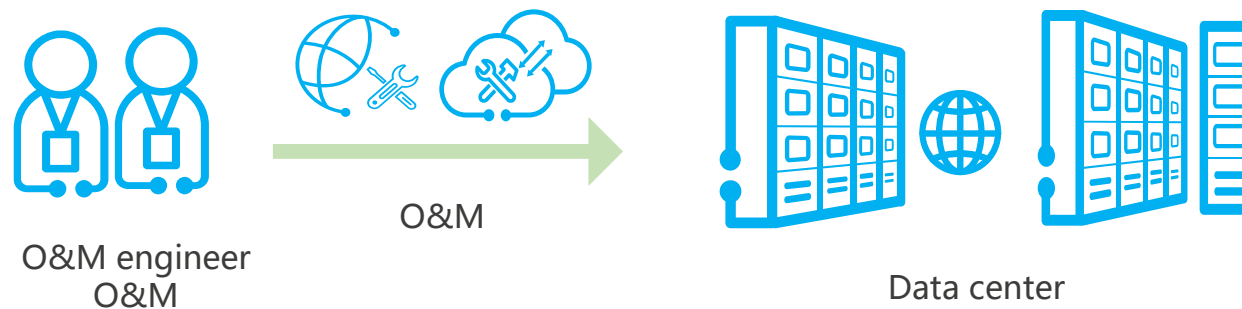
2. Cloud Eye

3. Log Tank Service (LTS)

4. Cloud Trace Service (CTS)

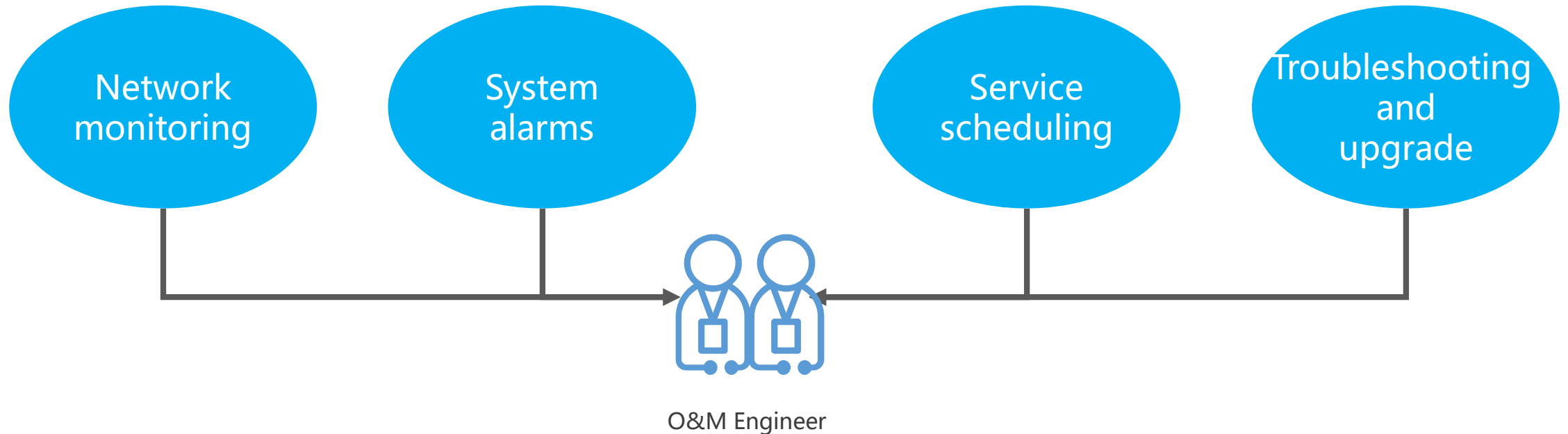
# What Is O&M?

- O&M refers to operations and maintenance. It includes monitoring and managing devices and service systems to ensure services run normally. O&M also includes handling various problems and summarizing maintenance experiences to improve O&M efficiency and quality.
- O&M is essentially the operations and maintenance of devices and services such as servers and networks in each phase of their lifecycles, to achieve an optimum level of cost, stability, and efficiency.



# Responsibilities of O&M Personnel

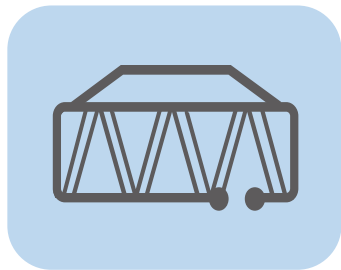
- O&M personnel are responsible for planning information, networks, and services based on service requirements and ensuring the long-term stability and availability of services by using various means, including but not limited to the following:





# Classification of O&M Personnel

- As the number and complexity of devices, operating systems, and applications deployed in ICT data centers increase, enterprises have higher requirements on O&M. This calls for specialized O&M. Common O&M positions are as follows:



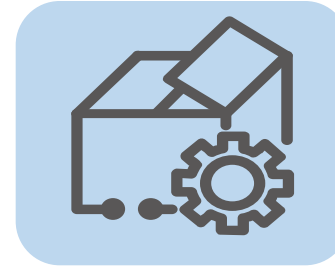
Hardware  
O&M



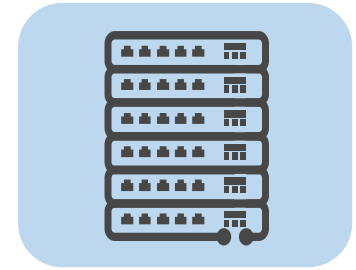
System  
O&M



Database  
O&M



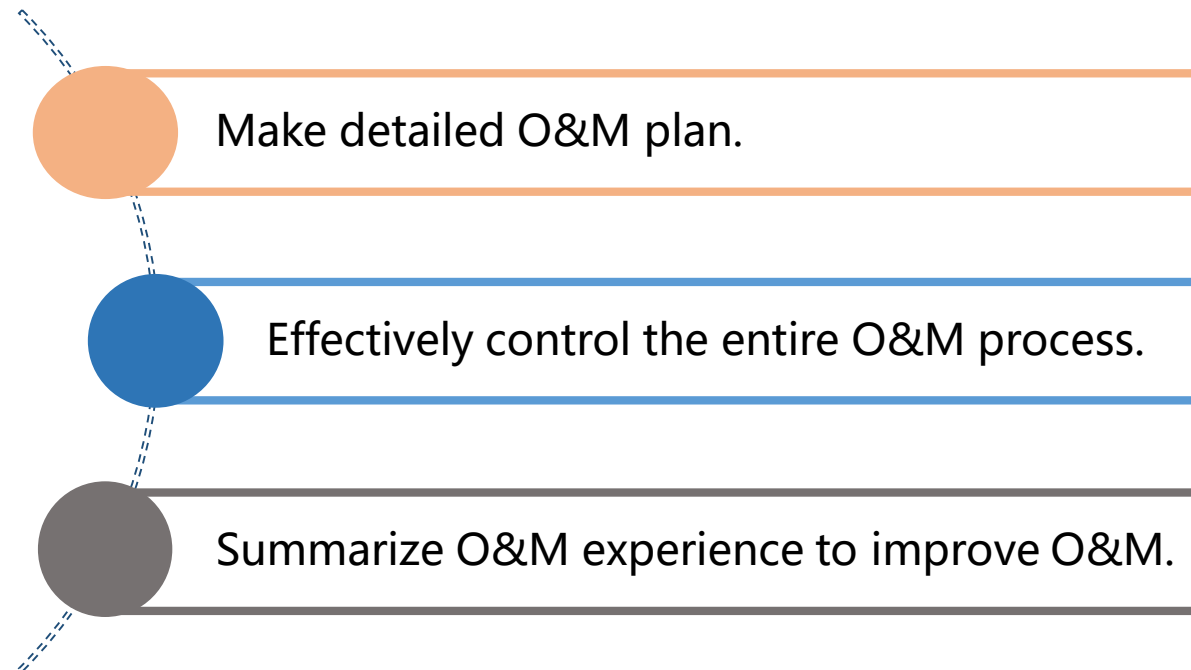
Application  
O&M



Network  
O&M

# ICT O&M Principles

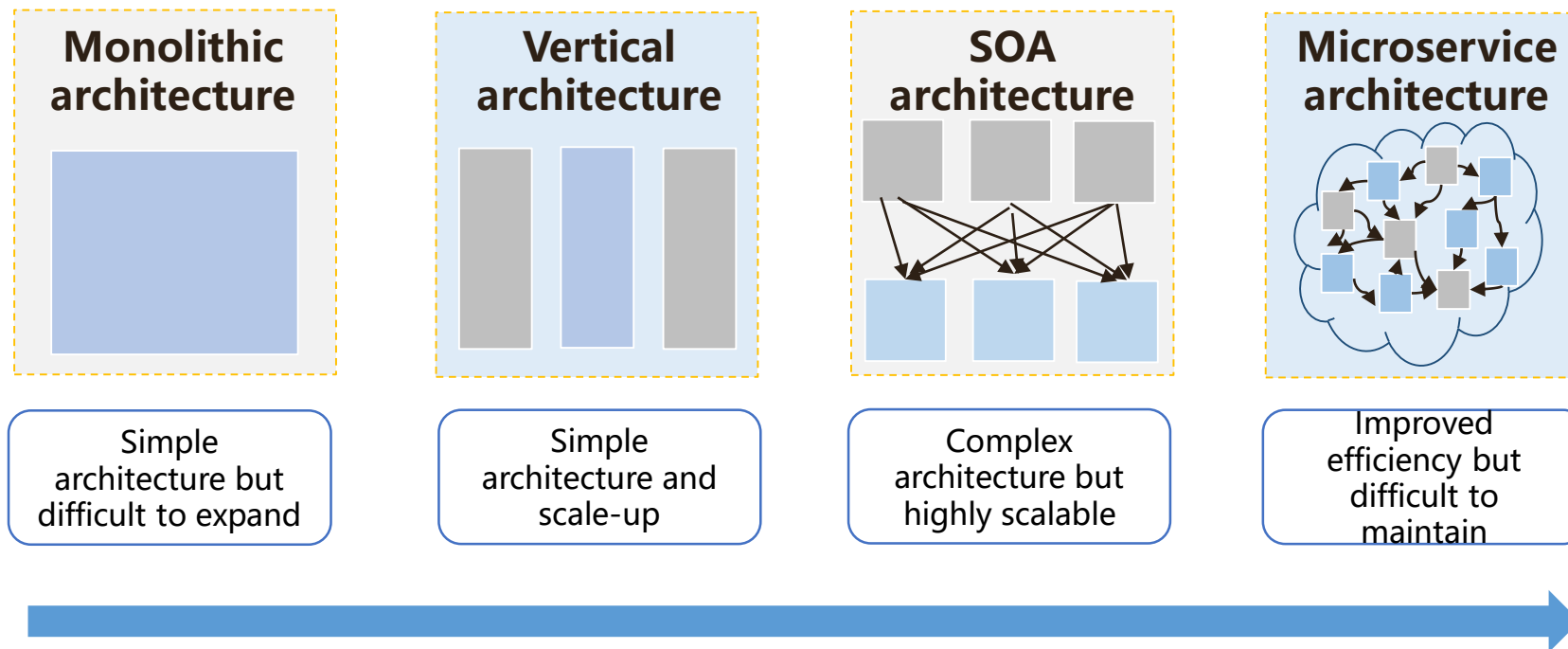
- We have learned about various O&M positions. How should ICT O&M personnel go about their jobs? O&M seems simple. However, to better serve enterprise business systems, we must first understand the overall principles of ICT O&M.





# O&M Challenges Brought About by Evolution of IT Architecture

- The IT architecture becomes more and more complex, and O&M personnel face many challenges.



# Era of Automated O&M

- Traditional manual O&M is being gradually replaced by automated O&M platforms. Responsibilities of O&M personnel and development personnel are converging. The concept of integrated O&M and development (DevOps) is becoming more and more popular and is being used by most enterprises.

## Traditional O&M

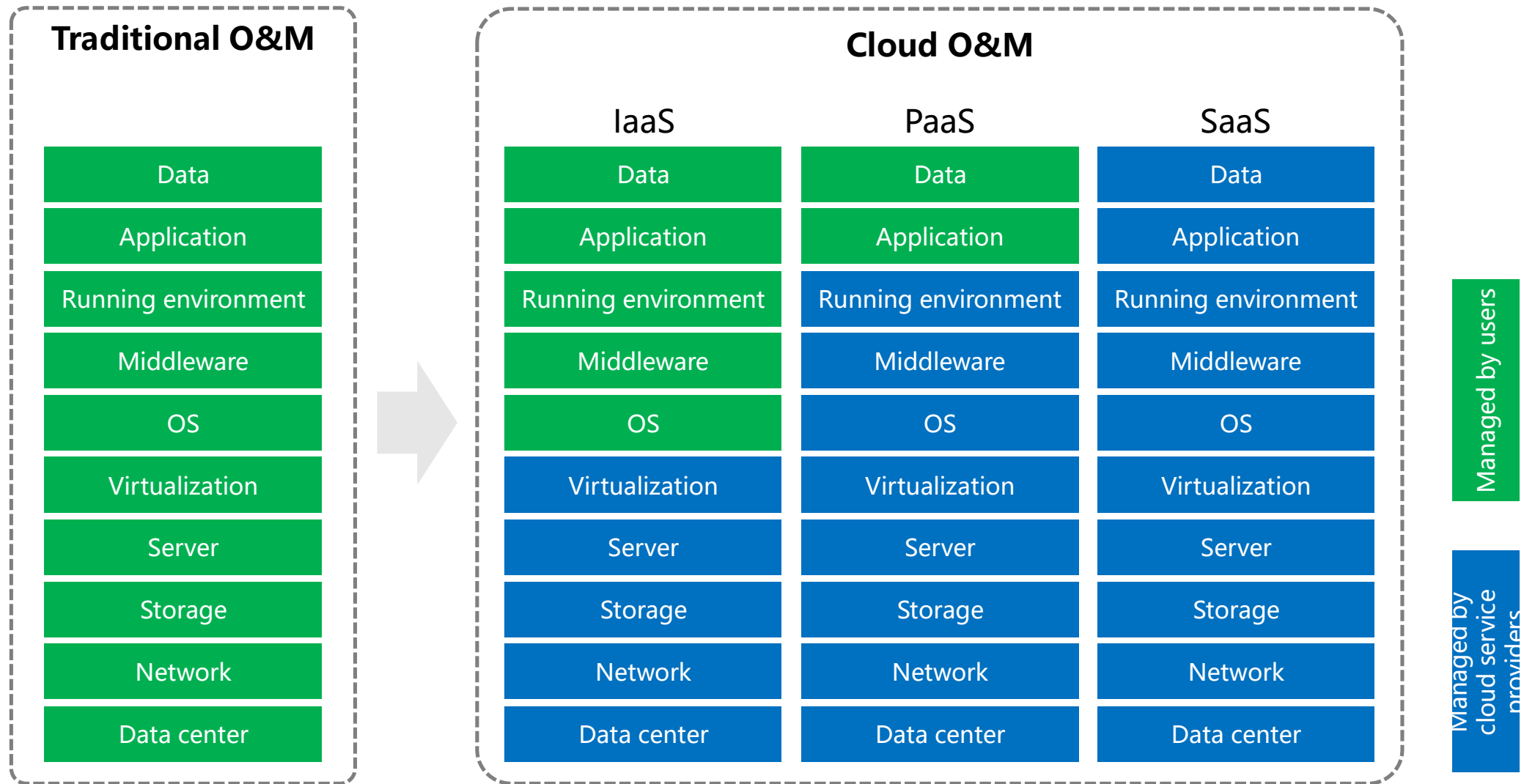
- Passive and inefficient O&M
- Lack of an effective O&M mechanism

VS

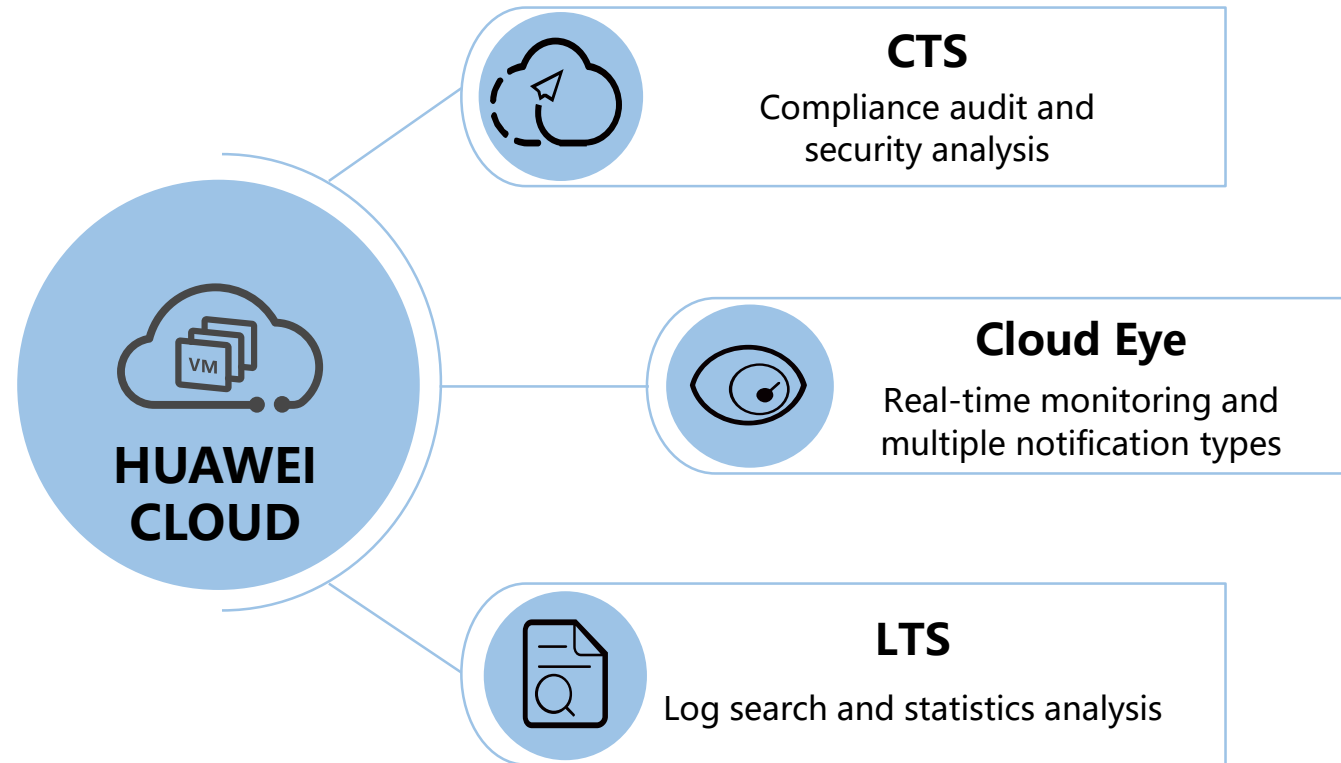
## Automated O&M

- During routine O&M, a large amount of repetitive work is automated to reduce or eliminate O&M delay.
- Monitoring tools help standardize user operations and monitor IT resources in real time. When a problem occurs, an alarm is automatically reported.

# O&M Changes in the Cloud Era



# Common O&M Services on HUAWEI CLOUD



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1. O&M Basic Concepts and Principles

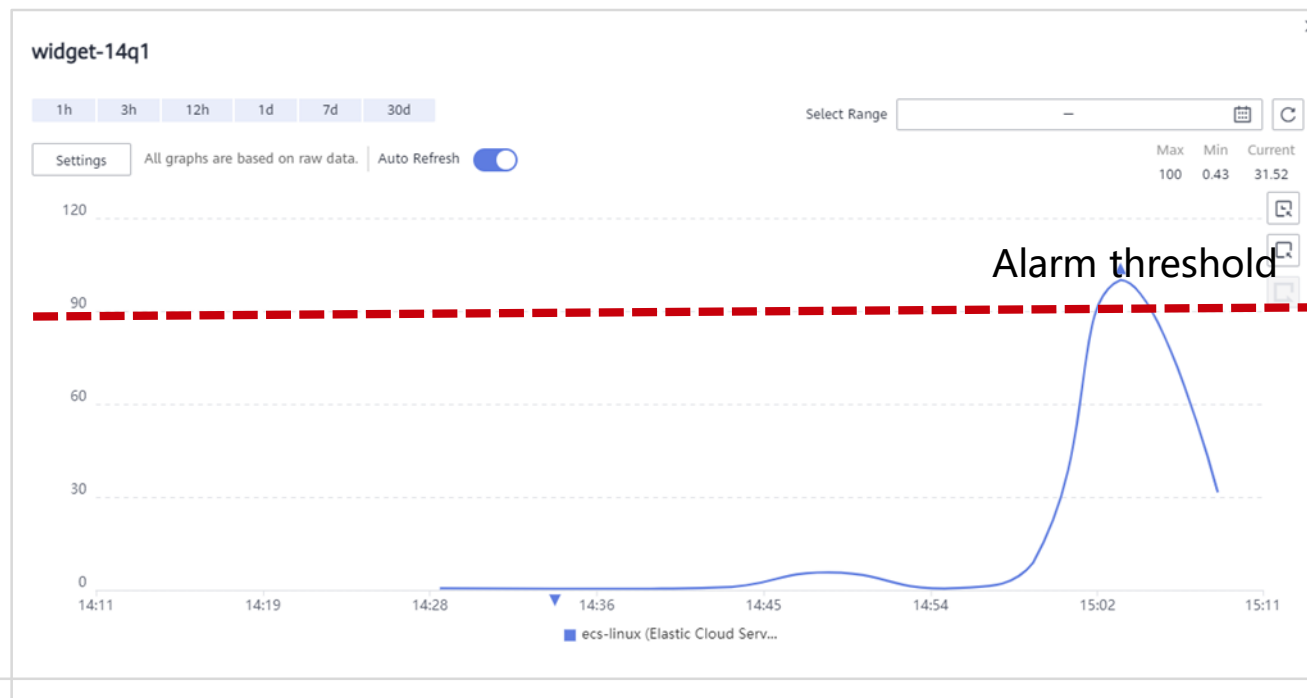
**2. Cloud Eye**

3. Log Tank Service (LTS)

4. Cloud Trace Service (CTS)

# Why Is Monitoring Required?

- Monitoring helps identify potential risks. Through monitoring, we can learn about the running status of the enterprise network. Once a security risk is detected, O&M personnel can be informed of the risk in a timely manner, so that they have time to mitigate the risk. This prevents the service system from being affected and resolves issues at the earliest.

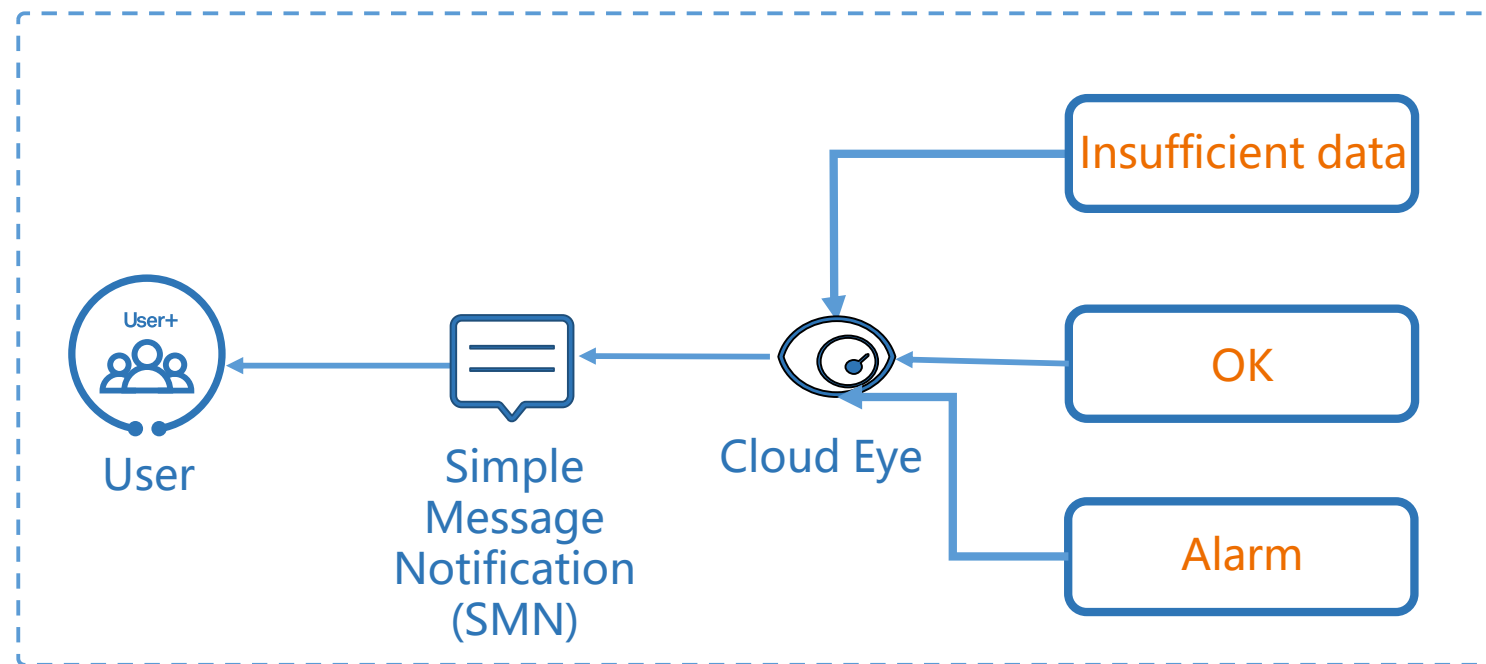


# What Is Cloud Eye?

- **Cloud Eye** is a multi-dimensional monitoring service. You can use Cloud Eye to monitor resources, set alarm rules, identify resource exceptions, and quickly respond to resource changes.

## Main functions:

- Automatic monitoring
- Real-time Notifications
- Panels
- Resource groups
- Monitoring data transfer to OBS





# Cloud Eye Advantages



Real-time  
Monitoring

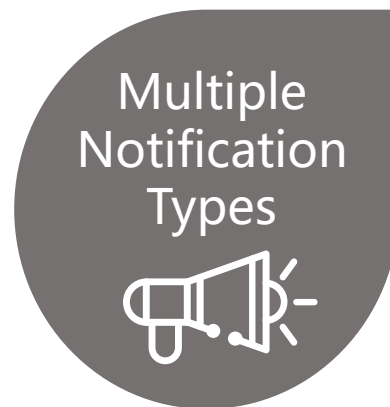
01



Ease of Use

Free

02



Multiple  
Notification  
Types

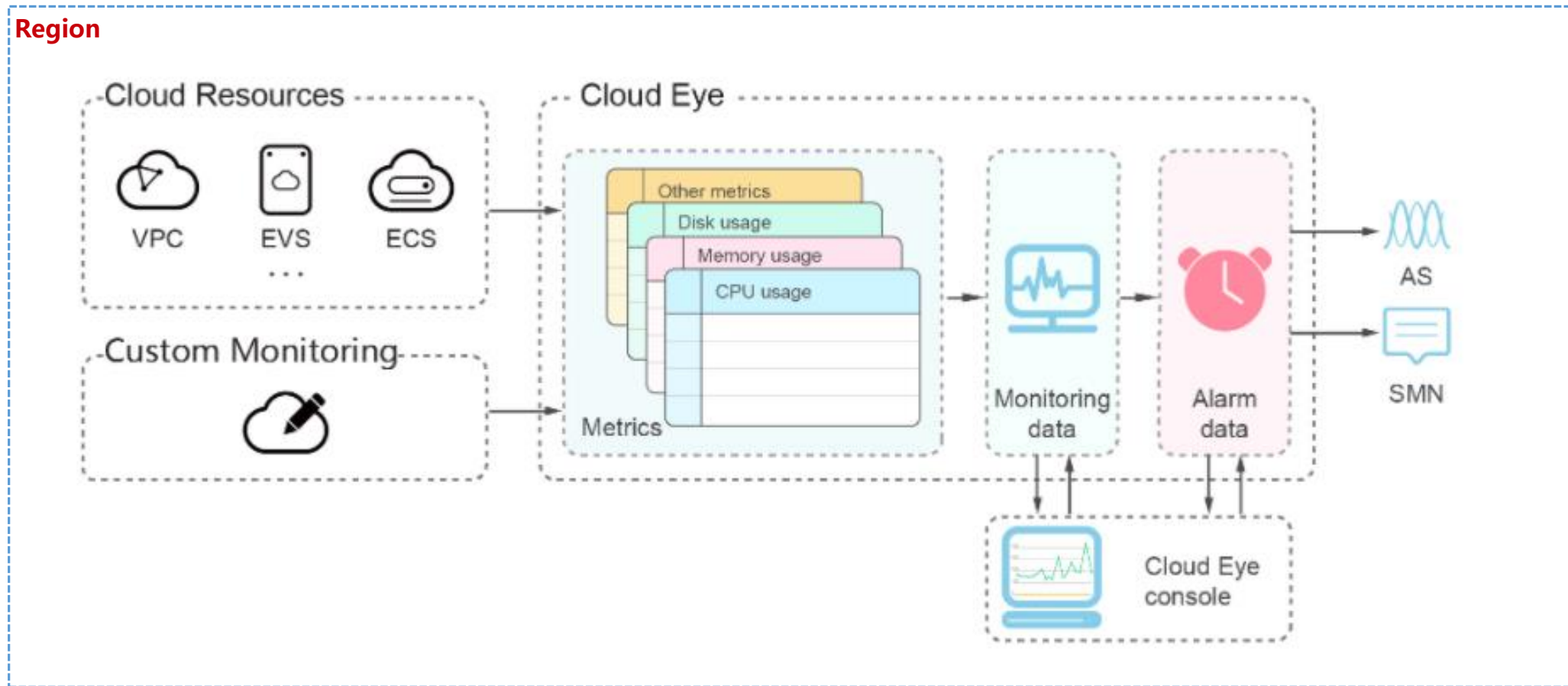
03



Comprehensive  
Monitoring

04

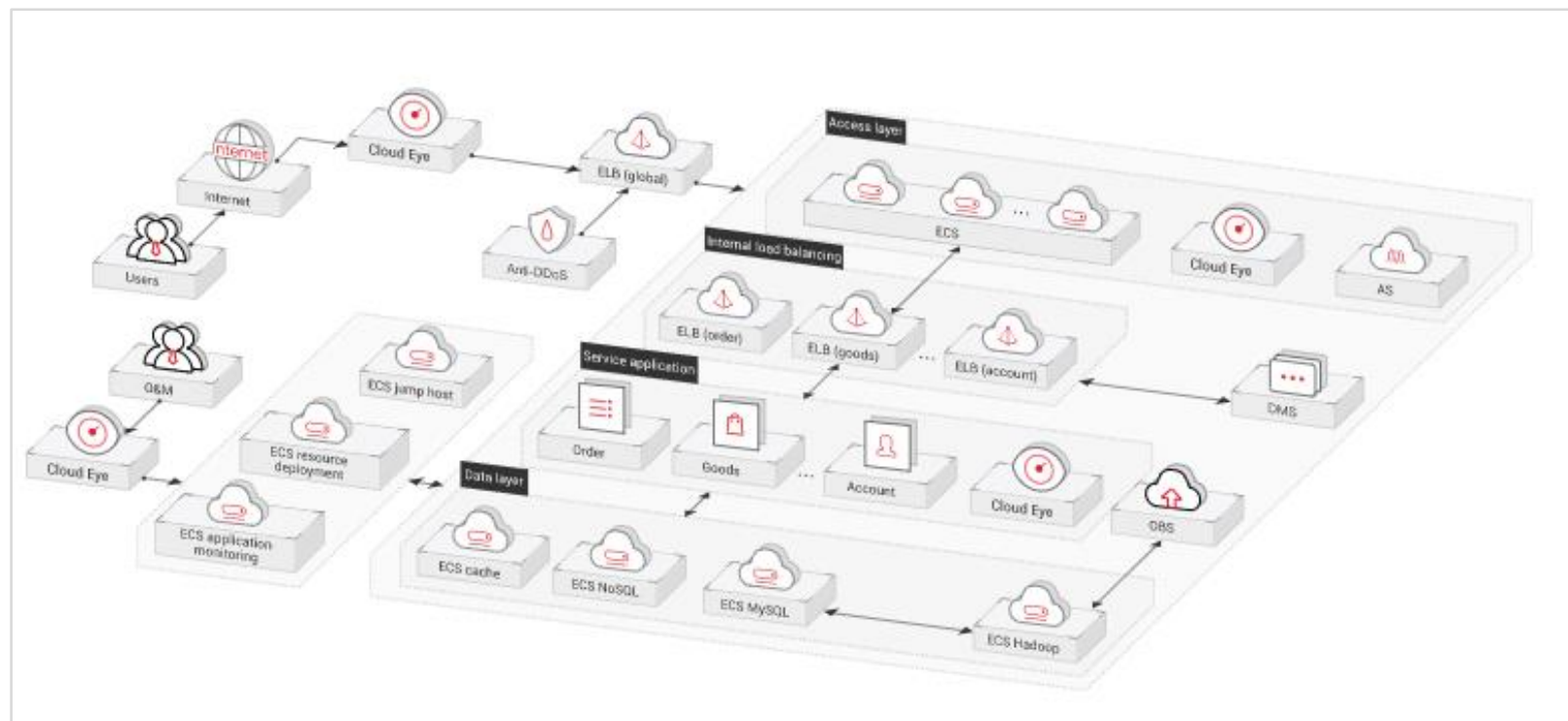
# Cloud Eye Architecture



# Application Scenario - E-Commerce Websites

## Characteristics of E-Commerce Websites

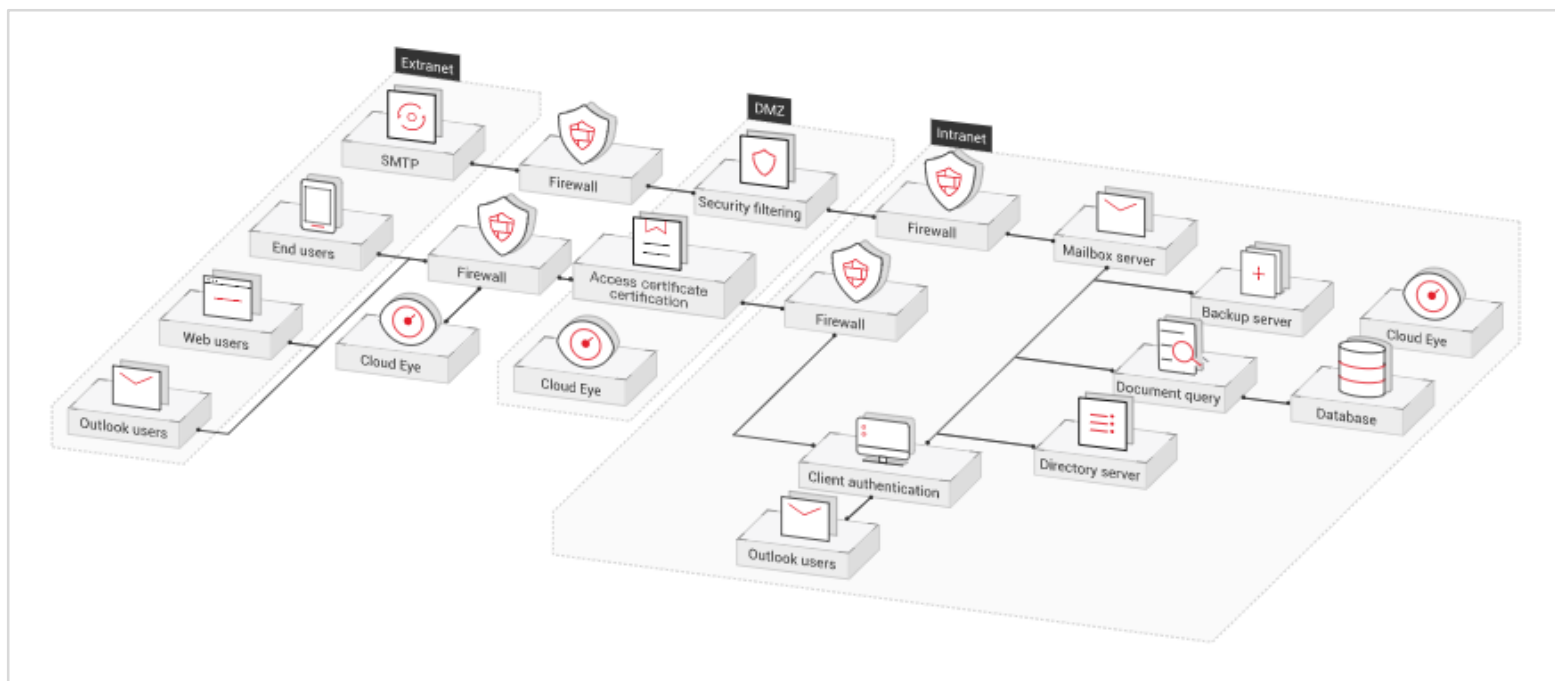
- **Editable Monitoring Panel**  
Provides you with a comprehensive view of key system monitoring information.
- **Alarm-Triggered Scaling**  
The system automatically expands or reduces capacity based on the service traffic volume and configured alarm rules.
- **Comprehensive Server Monitoring**  
Enables monitoring of customized network traffic metrics to prevent network bottlenecks.



# Application Scenario - Enterprise Offices

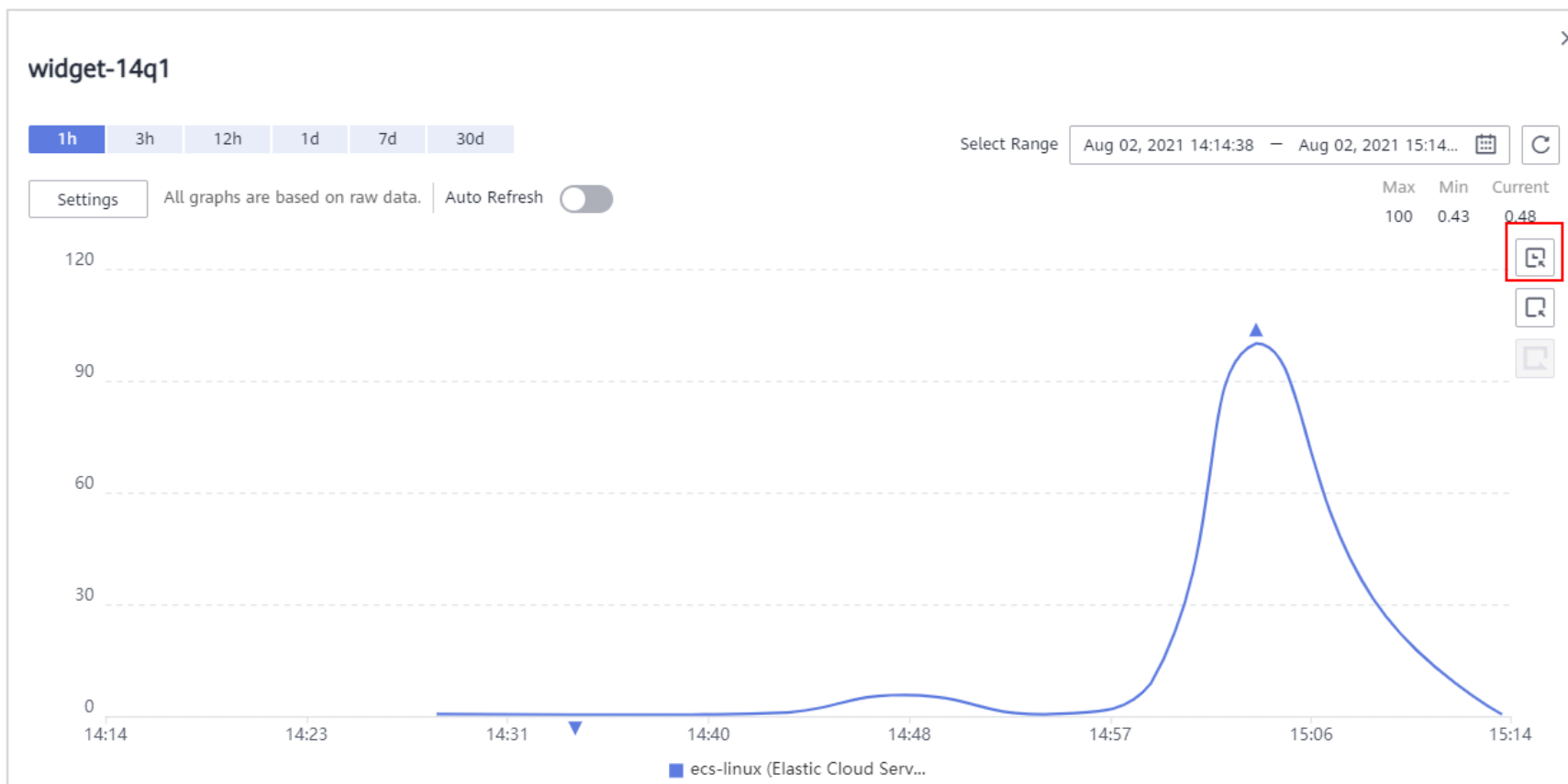
## Characteristics of Enterprise Offices

- **Alarm-Triggered Expansion**  
ECS expansion is automatically triggered by alarms that are generated if ECS usage reaches the configured threshold.
- **Log Monitoring**  
Logins are monitored in real time and malicious login requests are rejected to ensure security.
- **Comprehensive Server Monitoring**  
Enables monitoring of customized network traffic metrics to prevent network bottlenecks.



# Panels

- You can use panels to view core metrics and compare the performance data of different services.



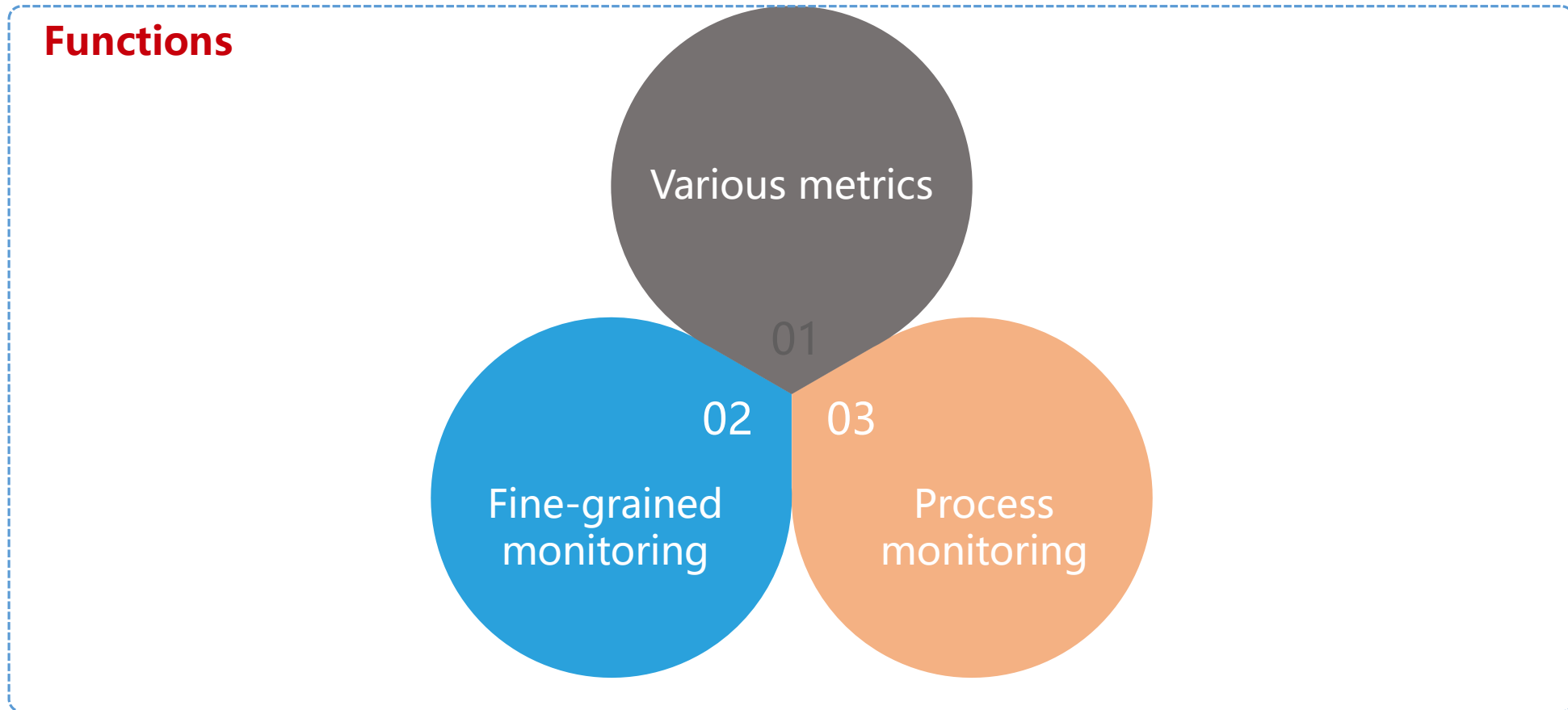
# Metrics

- This is the core concept of Cloud Eye. A metric refers to a quantitative value of a resource dimension on the cloud platform, such as the ECS CPU usage and memory usage. A metric is a time-dependent variable that generates a certain amount of monitoring data over time. It helps you understand the changes over a specific period of time.



# Server Monitoring

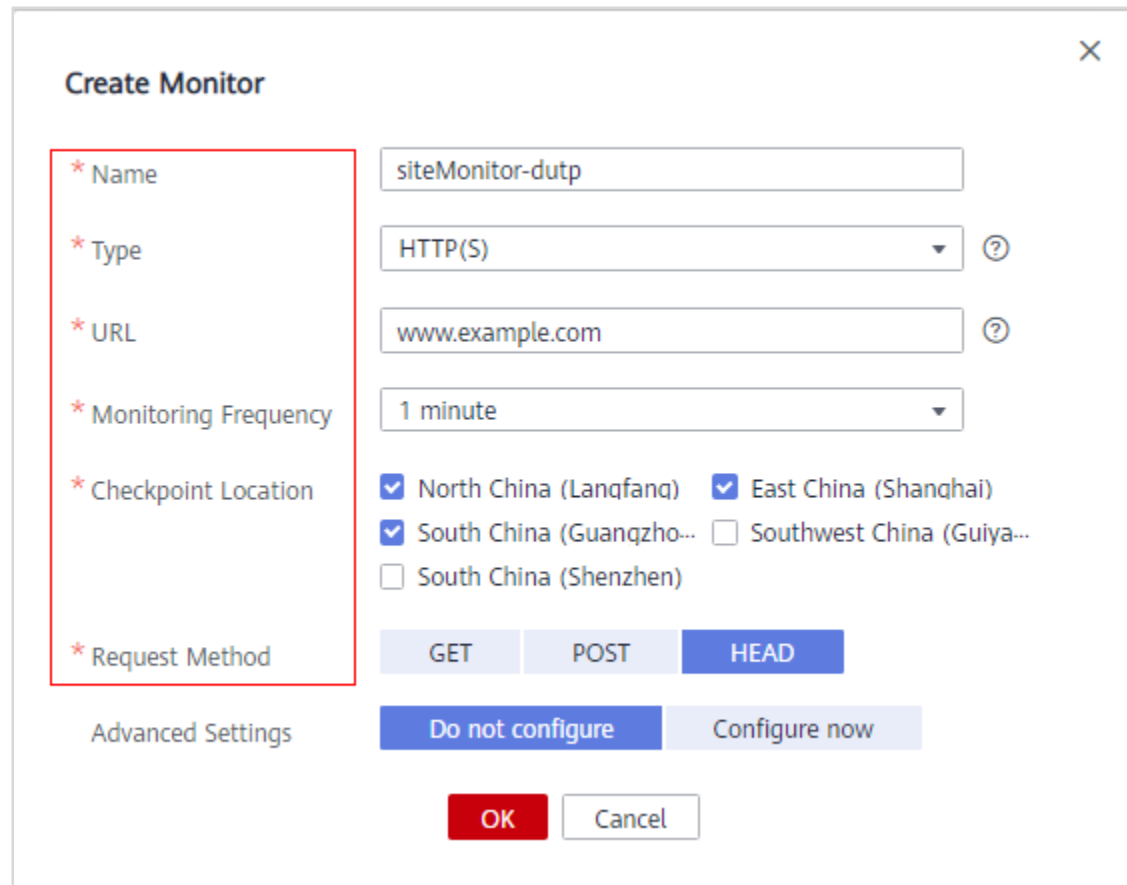
- Server monitoring comprises basic monitoring, OS monitoring, and process monitoring for servers.





# Website Monitoring

- Website monitoring is to continuously monitor remote server statuses, such as availability and connectivity, by simulating real users' access to remote servers.
- Website monitoring can detect availabilities of domain names and IP addresses, access response time, and packet loss rate, and generate alarms based on monitoring results.



**Create Monitor**

\* Name: siteMonitor-dutp

\* Type: HTTP(S)

\* URL: www.example.com

\* Monitoring Frequency: 1 minute

\* Checkpoint Location:  
☒ North China (Lanqiang) ☒ East China (Shanghai)  
☒ South China (Guangzhou) ☐ Southwest China (Guiyang)  
☐ South China (Shenzhen)

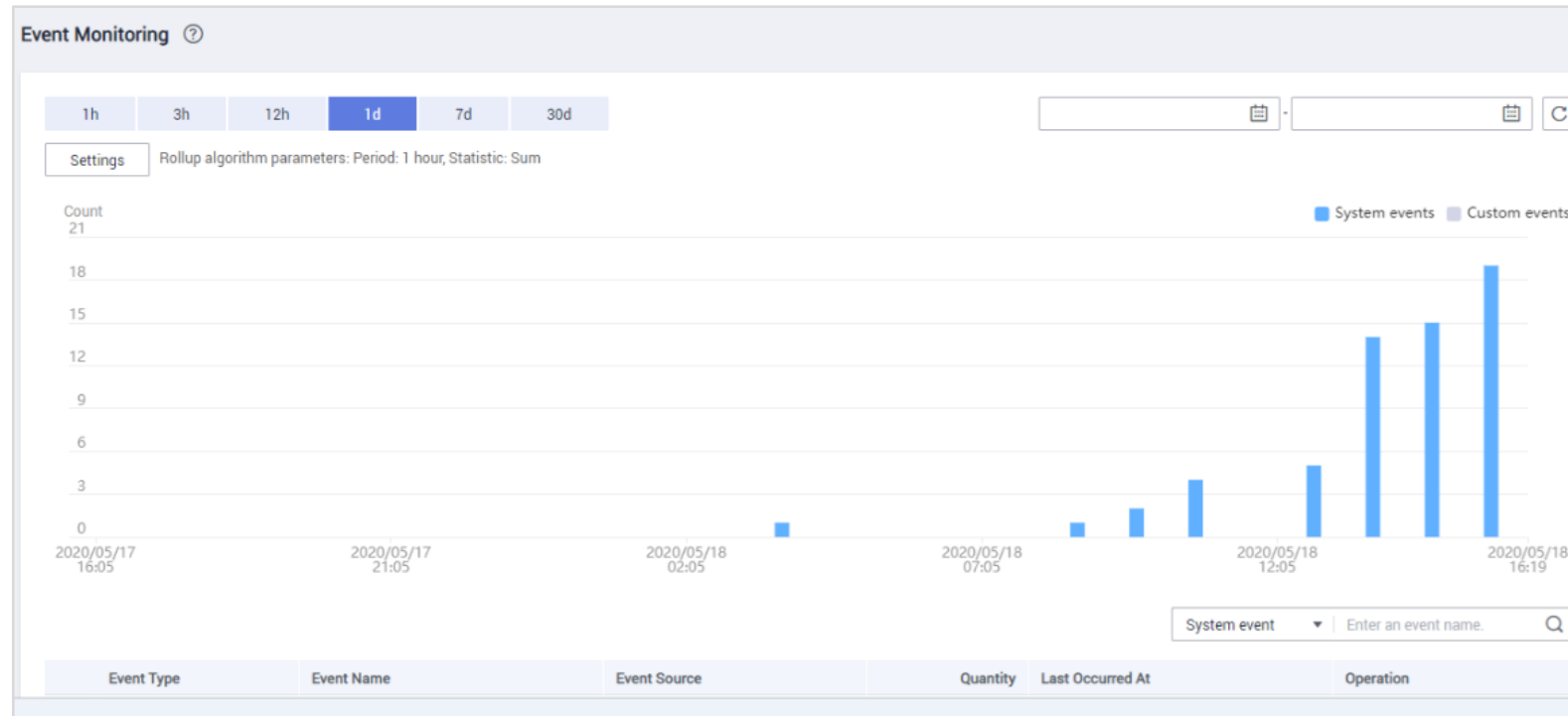
\* Request Method: GET POST HEAD

Advanced Settings: Do not configure Configure now

OK Cancel

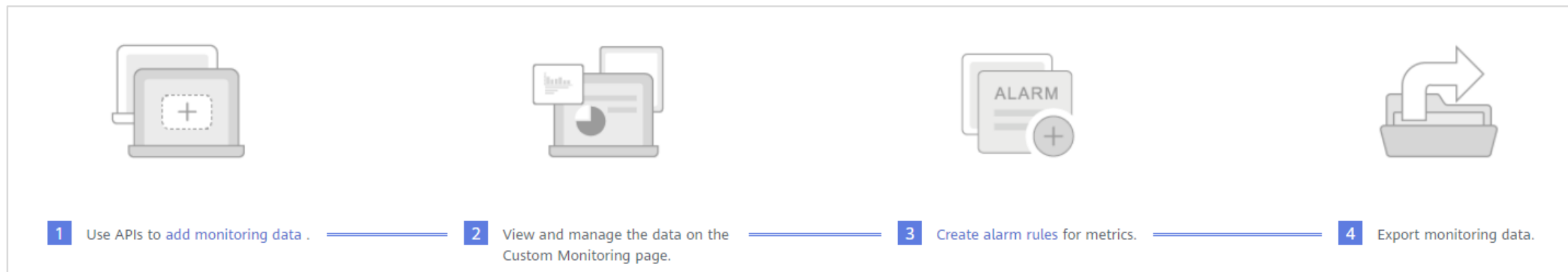
# Event Monitoring

- In event monitoring, you can query system and custom events reported to Cloud Eye through the API. You can create alarm rules for both system and custom events. When specific events occur, Cloud Eye generates alarms for them.



# Custom Monitoring

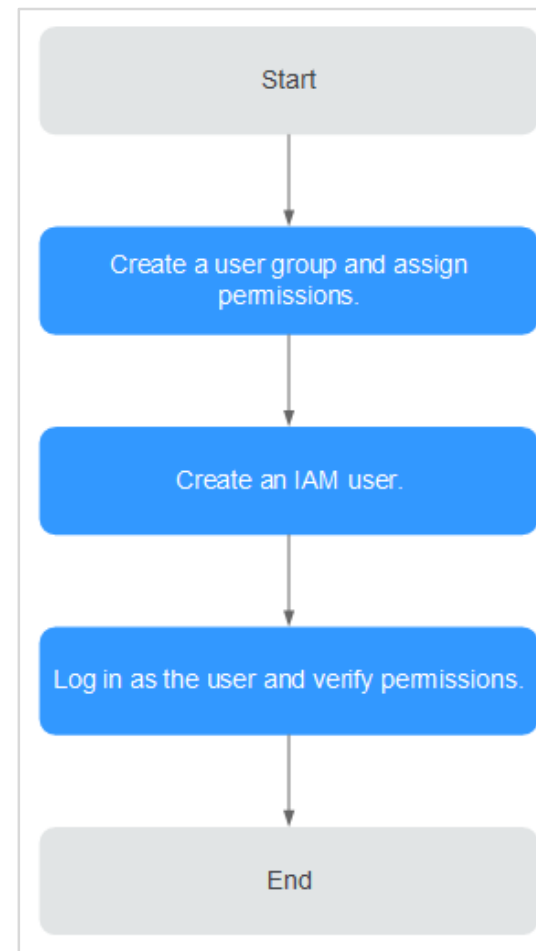
- The Custom Monitoring page displays all custom metrics reported by users. You can use simple API requests to publish collected monitoring data of those metrics to Cloud Eye for processing and display.



# Permissions Management

## Configuration:

- Create a user group on the IAM console, and assign the **CES Administrator**, **Tenant Guest**, and **Server Administrator** policies to the group.
- Create a user on the IAM console and add the user to the created group.
- Log in to the Cloud Eye console as the created user, and verify that the user only has the **CES Administrator** permission.

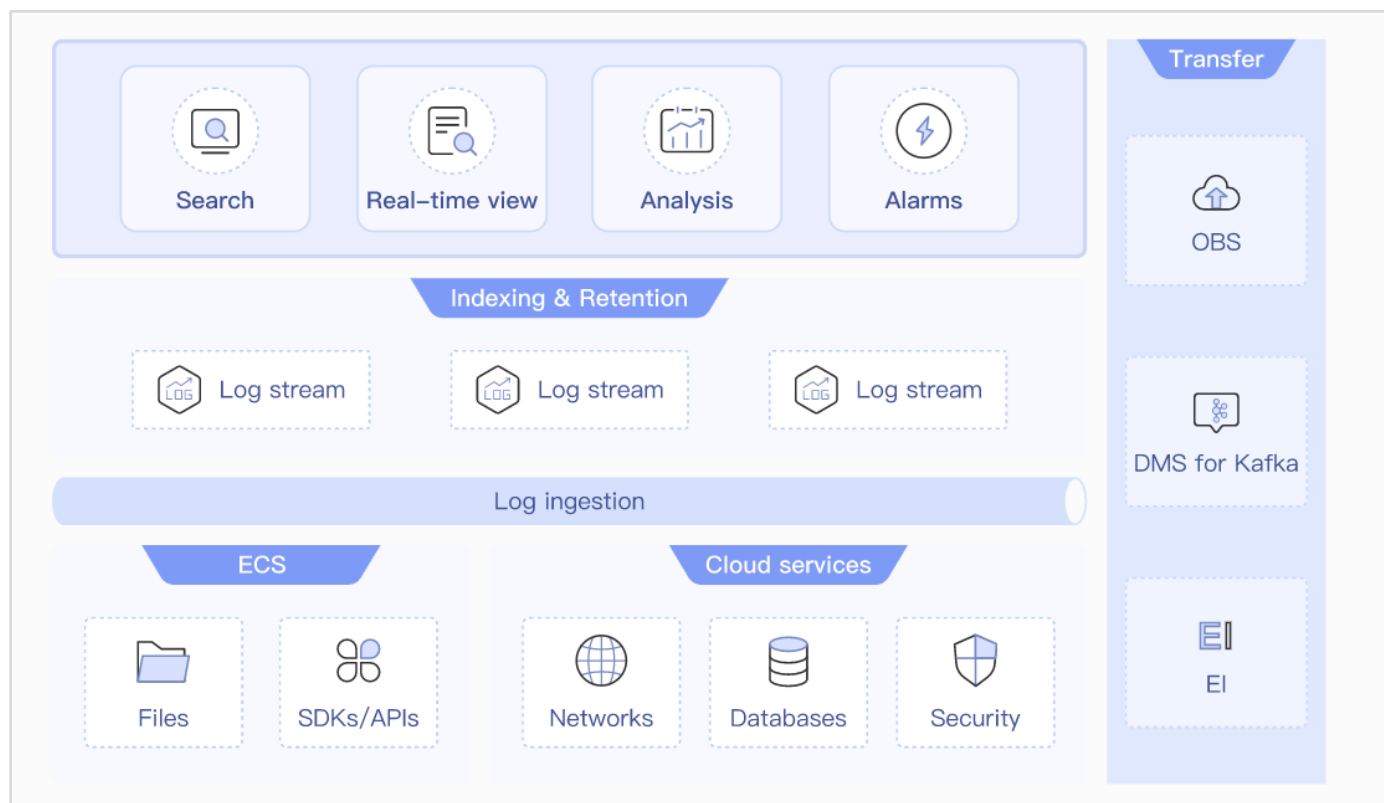


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1. O&M Basic Concepts and Principles
2. Cloud Eye
- 3. Log Tank Service (LTS)**
4. Cloud Trace Service (CTS)

# Why Logs Matter?

- Logs are files generated by system processes and record important system information. They provide useful details for fault location and program commissioning.

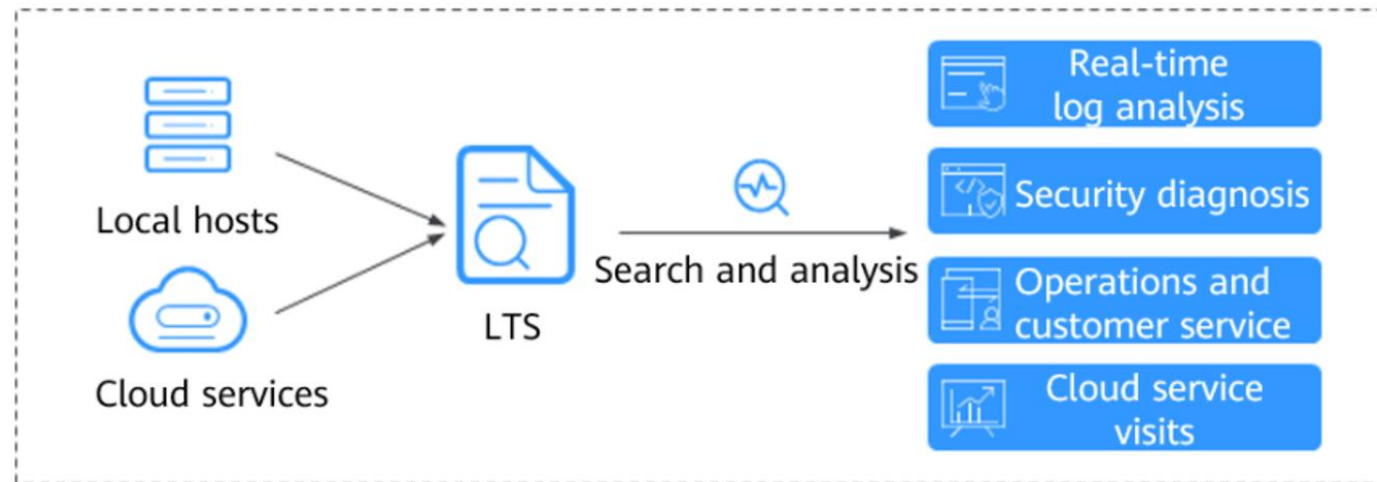


# What Is Log Tank Service?

- Log Tank Service (LTS) collects logs from hosts and cloud services for centralized management, and processes large volumes of logs efficiently, securely, and in real-time. LTS provides you with the insights needed for optimizing availability and performance of cloud services and applications. It allows you to make faster data-driven decisions, perform device O&M easily, and analyze service trends.

## Major functions:

- Real-time log collection
- Log query and real-time analysis
- Log monitoring and alarms
- Log transfer

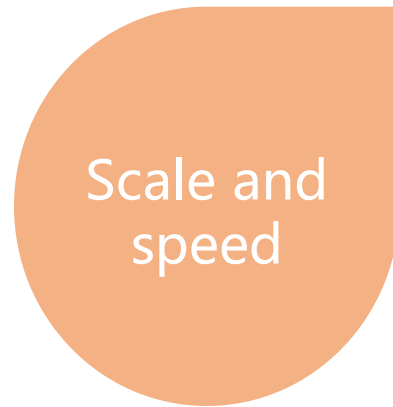




# LTS Advantages



01



02

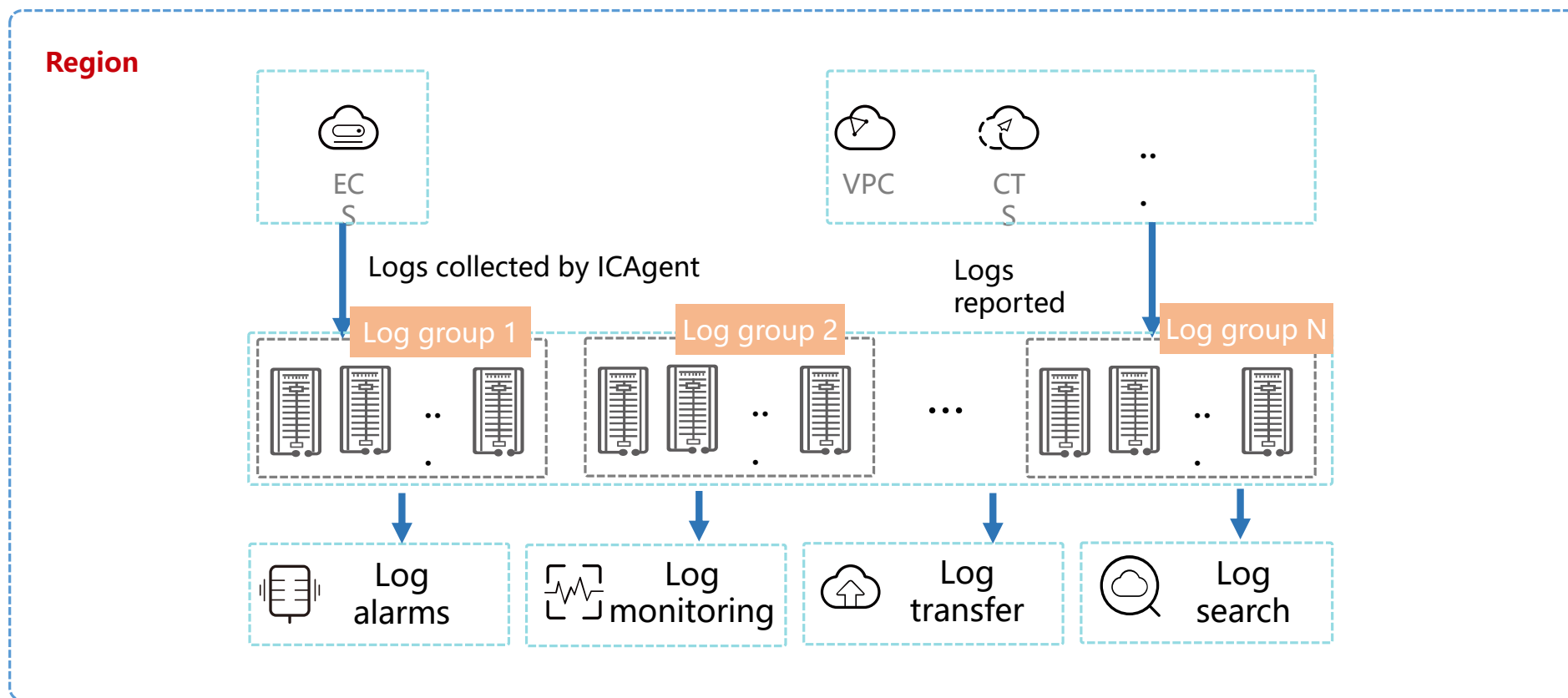


03



04

# LTS Architecture



# LTS Scenarios

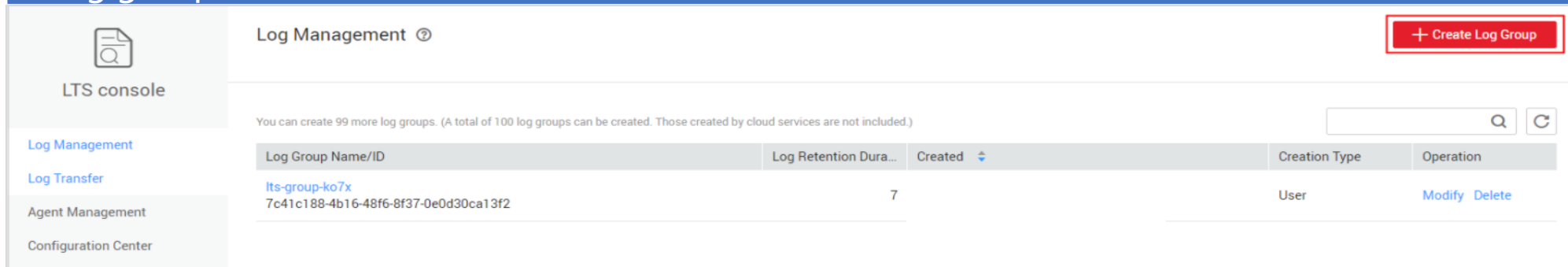
Log collection and analysis

Service performance optimization

Quick network fault locating

# Using LTS: Basic Concepts

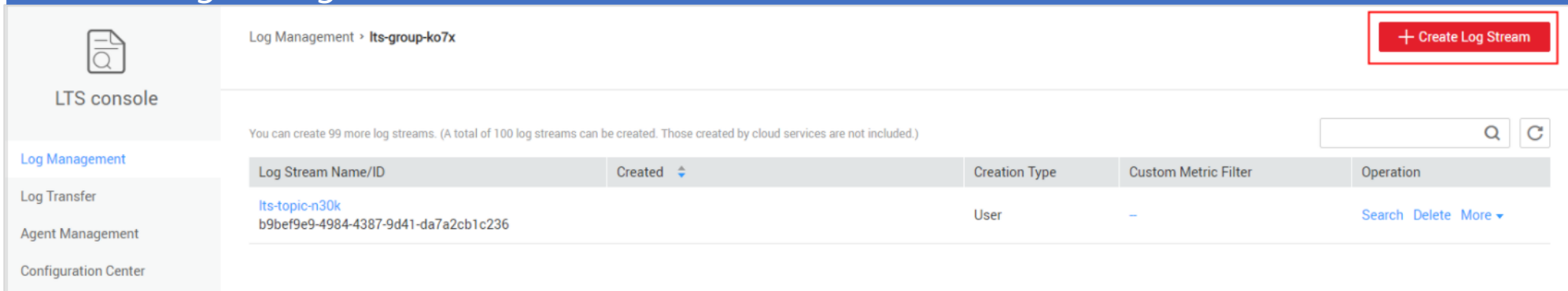
A log group is the basic unit in LTS for log management. You can set log retention duration for a log group.



The screenshot shows the 'Log Management' page in the LTS console. On the left is a sidebar with 'LTS console' and navigation links for 'Log Management', 'Log Transfer', 'Agent Management', and 'Configuration Center'. The main area has a 'Log Management' header with a '+ Create Log Group' button. Below it, a message states: 'You can create 99 more log groups. (A total of 100 log groups can be created. Those created by cloud services are not included.)'. A table lists log groups with columns: 'Log Group Name/ID', 'Log Retention Duration', 'Created', 'Creation Type', and 'Operation'. One log group is listed: 'lts-group-ko7x' with ID '7c41c188-4b16-48f6-8f37-0e0d30ca13f2', a retention of 7 days, created by 'User', with 'Modify' and 'Delete' actions.

Log Group Name/ID	Log Retention Duration	Created	Creation Type	Operation
<a href="#">lts-group-ko7x</a> 7c41c188-4b16-48f6-8f37-0e0d30ca13f2	7		User	<a href="#">Modify</a> <a href="#">Delete</a>

A log stream is the basic unit for log read and write. You can create log streams in a log group for finer log management.

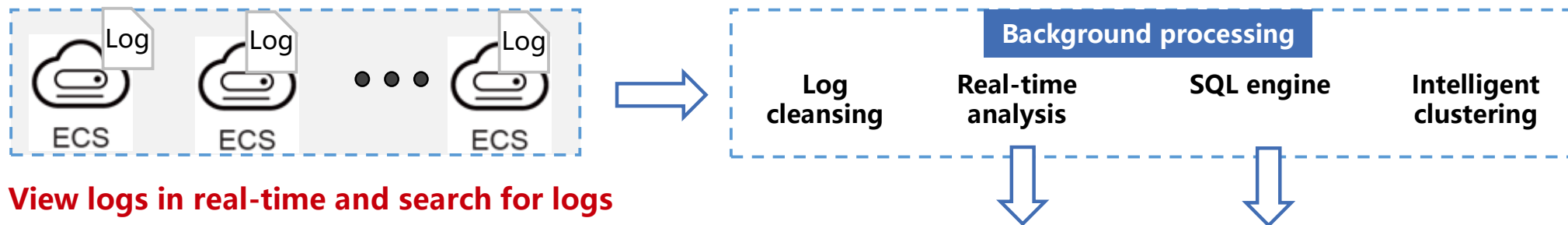


The screenshot shows the 'Log Management' page for a specific log group, 'lts-group-ko7x'. The breadcrumb is 'Log Management > lts-group-ko7x'. There is a '+ Create Log Stream' button. A message states: 'You can create 99 more log streams. (A total of 100 log streams can be created. Those created by cloud services are not included.)'. A table lists log streams with columns: 'Log Stream Name/ID', 'Created', 'Creation Type', 'Custom Metric Filter', and 'Operation'. One log stream is listed: 'lts-topic-n30k' with ID 'b9bef9e9-4984-4387-9d41-da7a2cb1c236', created by 'User', with a custom metric filter of '-', and actions 'Search', 'Delete', and 'More'.

Log Stream Name/ID	Created	Creation Type	Custom Metric Filter	Operation
<a href="#">lts-topic-n30k</a> b9bef9e9-4984-4387-9d41-da7a2cb1c236		User	-	<a href="#">Search</a> <a href="#">Delete</a> <a href="#">More</a>

ICAgent is the log collection tool of LTS. If you want to collect logs from hosts, install ICAgent on the hosts.

# Using LTS: Querying Logs



**View logs in real-time and search for logs**

Raw Logs   Real-Time Logs   Visualization

Search by content by default

Quick Analysis ?

Collected Content

No fields added.

Set Quick Analysis

**Logical AND and OR operators and fuzzy match are supported in log search.**

.0-57.el7_9 try	View Context
.0-57.el7_9 try	View Context
/manual/setup.sh	View Context
	View Context
	View Context
Begin start icAgent	View Context

**Quick analysis: perform statistical analysis or filtering of structured fields**

**View log contexts for more accurate analysis**

# Using LTS: Viewing Real-Time Logs

- You can view logs in real time on the Real-Time Logs tab, where the logs are updated every five seconds.

The screenshot displays a web interface for viewing real-time logs. At the top, there are three tabs: 'Raw Logs', 'Real-Time Logs' (which is selected and underlined), and 'Visualization'. To the right of these tabs is a dropdown menu set to 'Last 1 hour'. Below the tabs, there are two buttons: 'Clear' and 'Pause'. The main area is titled 'Log Content' and contains a list of log entries. Each entry is on a new line and shows a timestamp, host name, and log message. The log messages indicate a sync loss and subsequent driver resync for the VMMouse device.

Log Content
Aug 2 15:52:42 ecs-linux kernel: psmouse serio1: VMMouse at isa0060/serio1/input0 lost sync at byte 1
Aug 2 15:52:42 ecs-linux kernel: psmouse serio1: VMMouse at isa0060/serio1/input0 - driver resynced.
Aug 2 15:52:43 ecs-linux kernel: psmouse serio1: VMMouse at isa0060/serio1/input0 lost sync at byte 1
Aug 2 15:52:43 ecs-linux kernel: psmouse serio1: VMMouse at isa0060/serio1/input0 - driver resynced.

# Using LTS: Structuring Logs

- After you add extraction rules, LTS uses these rules to convert raw logs to a structured format, facilitating execution of SQL queries.

Select a log event as a sample and extract fields.

2020-01-08\_17:17:36.420 [http-nio-8083-exec-9-txId = b63545cd7a69f2a4 ] INFO c.h.capi.PersistenceRestController - 0 add 34211223411 to cart.

You can extract fields from log texts in any format and easily generate regular expressions for log parsing on the UI.

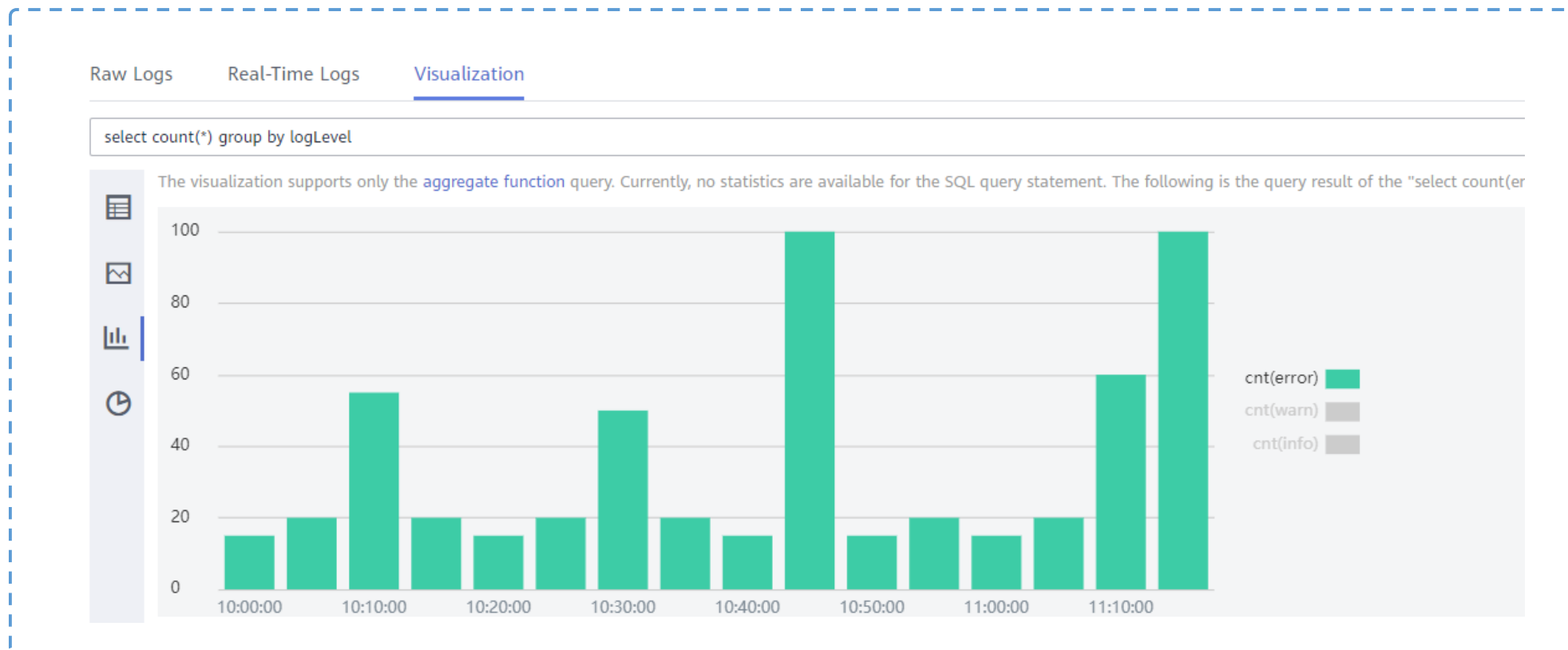
Statement	Description	Example		
GROUP BY	Group results of one or more columns (generally used with aggregate functions).	select * group by (year),(month)		
LIKE	Search for the specified pattern in a column in the WHERE clause.	Function	Description	Example
		count(*)	Calculate the number of tuples.	select count(*)
WHERE	Specify the selection condition.	count (<column name>)	Calculate the number of values in a column.	select count(num)
		min (<column name>)	Calculate the minimum value in a column.	select min(num)
		max (<column name>)	Calculate the maximum value in a column.	select max(num)
		avg (<column name>)	Calculate the average value in a column.	select avg(num)
		sum (<column name>)	Calculate the sum of values in a column.	select sum(num)

Common SQL syntax and aggregate functions are supported.



# Using LTS: Visualizing Logs

- You can visualize SQL query results in tables, trend charts, bar charts, or pie charts.



# Using LTS: Collecting Statistics and Configuring Alarms

### Step 1 Create a statistical rule

\* Rule Type

\* Rule Name


\* Keyword  ?

Description

\* Log Bucket  ↻

### Step 2 Check the curve chart of keyword statistics

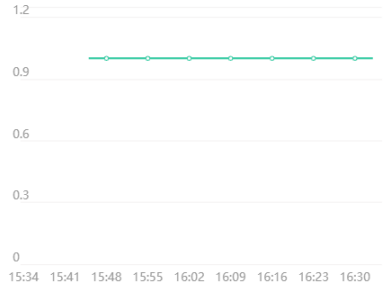
Interpolation Mode  ? ↻



### Step 3 Set a threshold


Threshold Preview

Statistic Method  Statistical Cycle



### Step 4 Connect to the alarm center

<input type="checkbox"/>	Rule Name ⌵	Log Bucket ⌵	Rule Type	Keywords ⌵	Metric
<input type="checkbox"/>	count-error	count-error	Keywords	error	--



Keyword alarms support HTTP, email, and SMS notifications.

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# What Is Auditing?

- Auditing is the process of gathering and analyzing evidence to evaluate an enterprise's financial statements, drawing conclusions and producing reports on the compliance of the statements to generally accepted standards, and communicating the audit results to stakeholders. An audit in the information and communications technology (ICT) industry is mainly an examination of the entire lifecycle of information systems.

Audits on enterprises will usually compare the following two aspects:



Enterprise  
financial  
statements

The diagram consists of a dashed blue rounded rectangle containing two arrows pointing towards each other. The left arrow is grey and points right, containing the text 'Enterprise financial statements'. The right arrow is light blue and points left, containing the text 'Actual enterprise operations'.

Actual enterprise  
operations

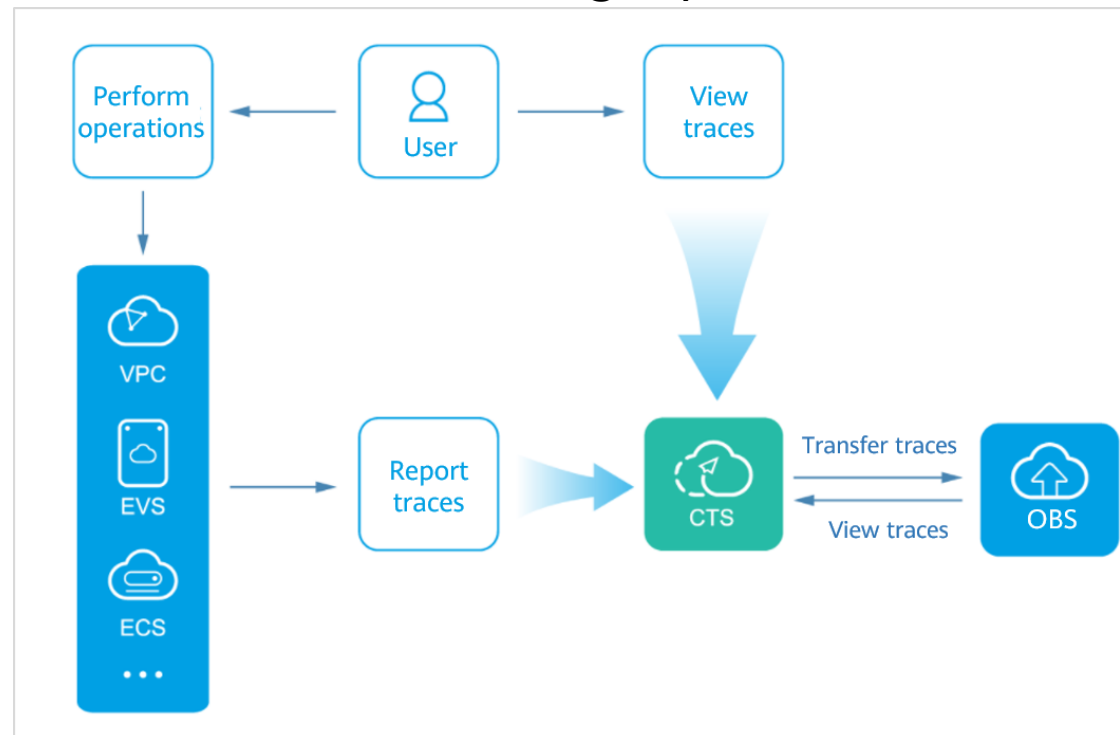
# Purpose of Auditing

- Auditing is to check whether the information presented in an enterprise's financial statements is fair and accurate, helping the enterprise operate in a healthy manner. In the ICT industry, audits usually aim to examine whether information systems are running healthily.



# What Is Cloud Trace Service?

- Cloud Trace Service (CTS) records operations on cloud resources in your account. You can use the operation records (called traces in CTS) to perform security analysis, track resource changes, conduct compliance audits, and locate faults. You can also transfer the traces to Object Storage Service (OBS) in real time to store them for a longer period of time.



# CTS Advantages

## Traditional auditing

- Standardized audit processes cannot be carried out in traditional IT environments. Unauthorized API calls and console operations on servers, databases, OSs, and other resources cannot be systematically recorded in real time. System configuration changes are manually documented by IT staff.
- Audit records are manually documented. They do not have copies and cannot be stored for a long time.

VS.

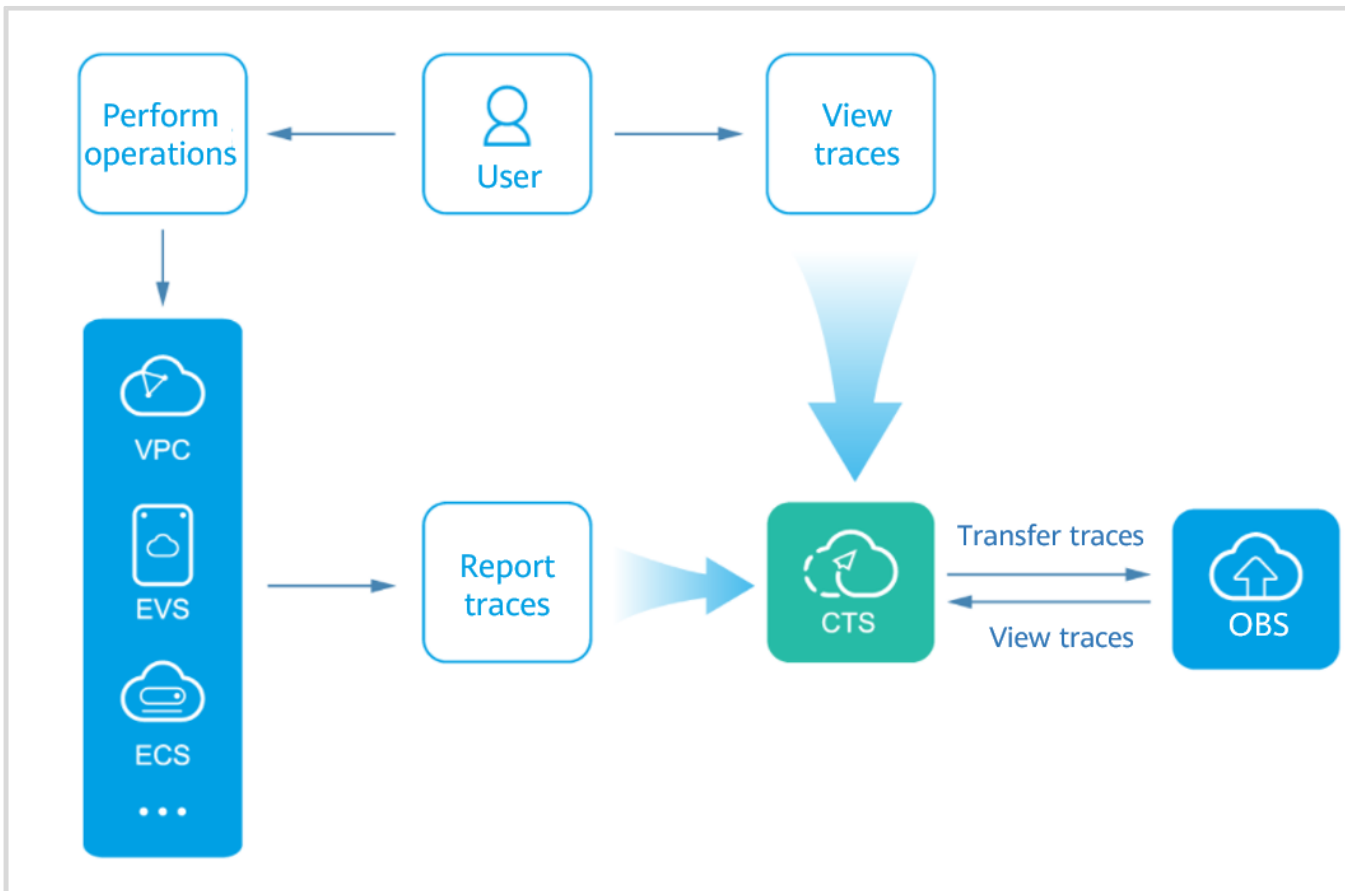
## CTS

- All operations on cloud resources can be systematically recorded in real time. Manual efforts are not required.
- CTS can regularly merge traces into time-stamped files and transfer the files to OBS buckets for highly available and cost-effective long-term storage.

# CTS Architecture

- **Major functions:**

- Trace collection
- Trace query
- Trace transfer
- Trace file encryption





# CTS Basic Concepts

## Tracker

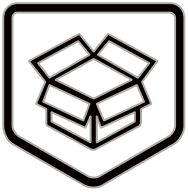
You need to enable CTS before using it. A tracker is automatically created when CTS is enabled. The tracker automatically identifies all cloud services you are using and records all operations performed on the services.

## Trace

Traces are operation records captured and stored by CTS. Traces help you identify when a specific operation was performed by a specific user on a specific resource.

- Management traces
  - Traces reported by cloud services
- Data traces
  - Traces of read and write operations reported by OBS

# CTS Scenarios



Resource  
tracking



Compliance  
auditing



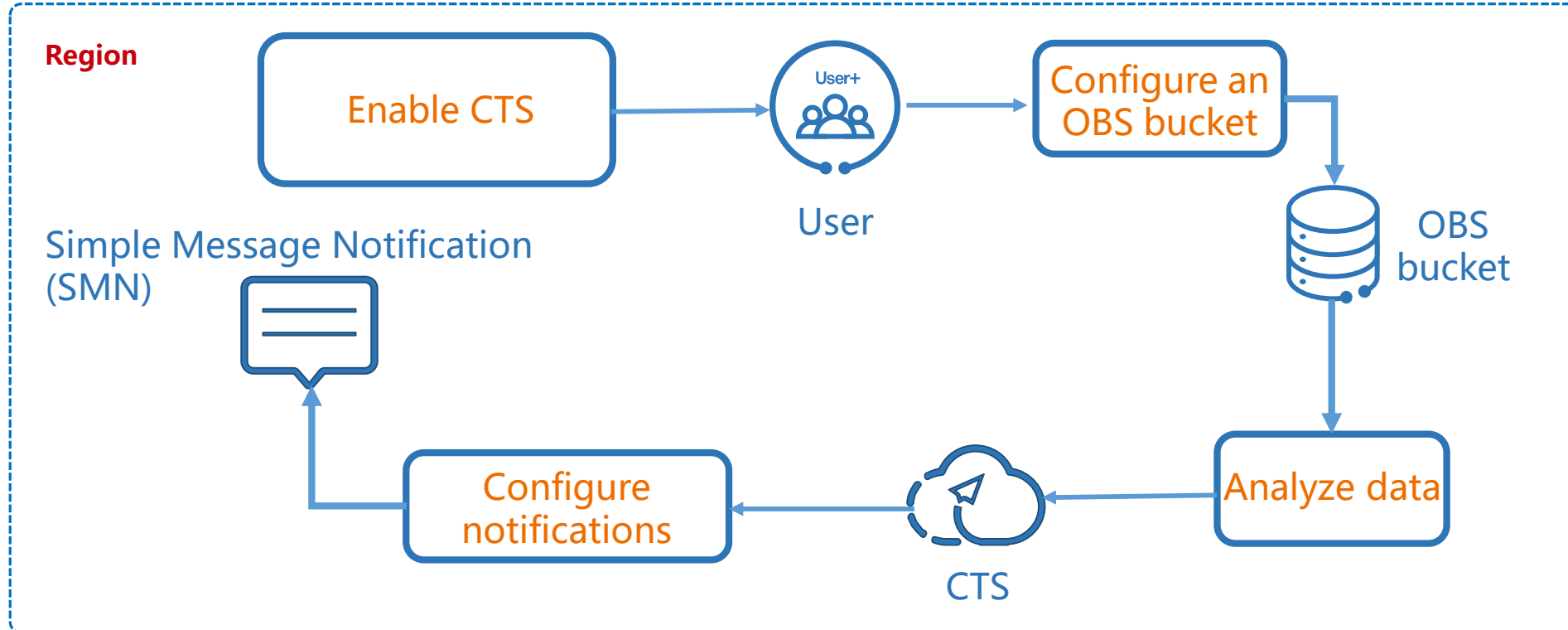
Fault  
locating



Security  
analysis

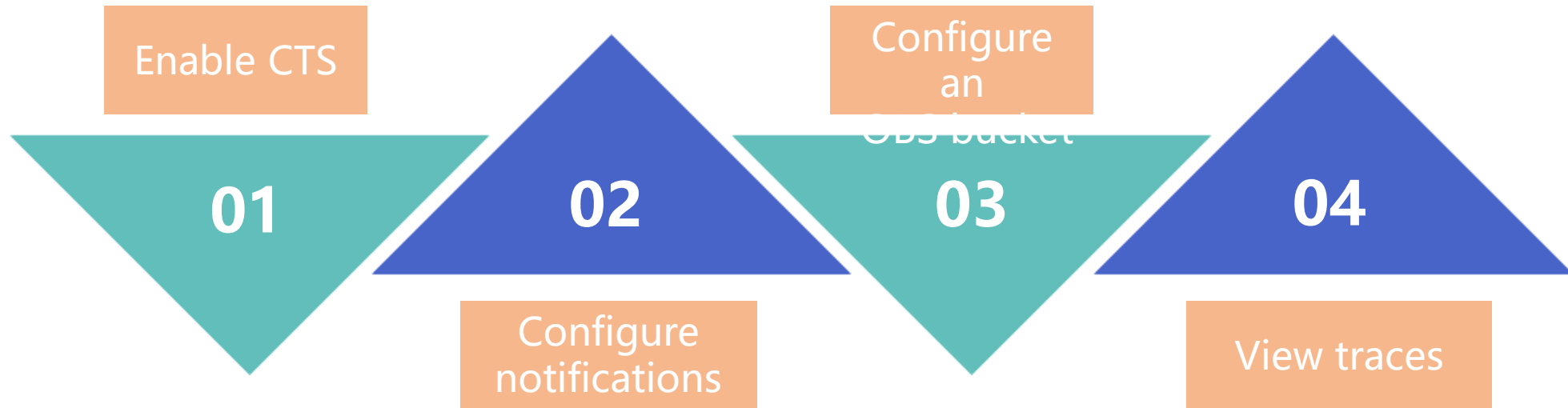
# Using CTS: Security Analysis

- Each trace records details of an operation. You can identify when an operation was performed by a specific user and the IP address from which the operation was performed. You can perform security analysis and user behavior pattern analysis based on traces and configure notifications for key operations.



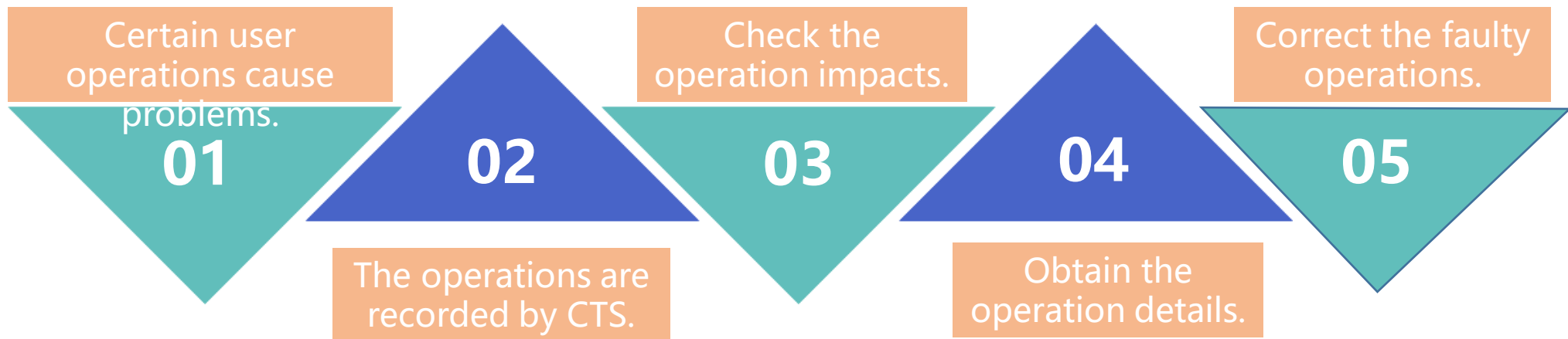
# Using CTS: Resource Change Tracking

- CTS records resource changes and the change results, allowing you to track and analyze resource usage statistics.



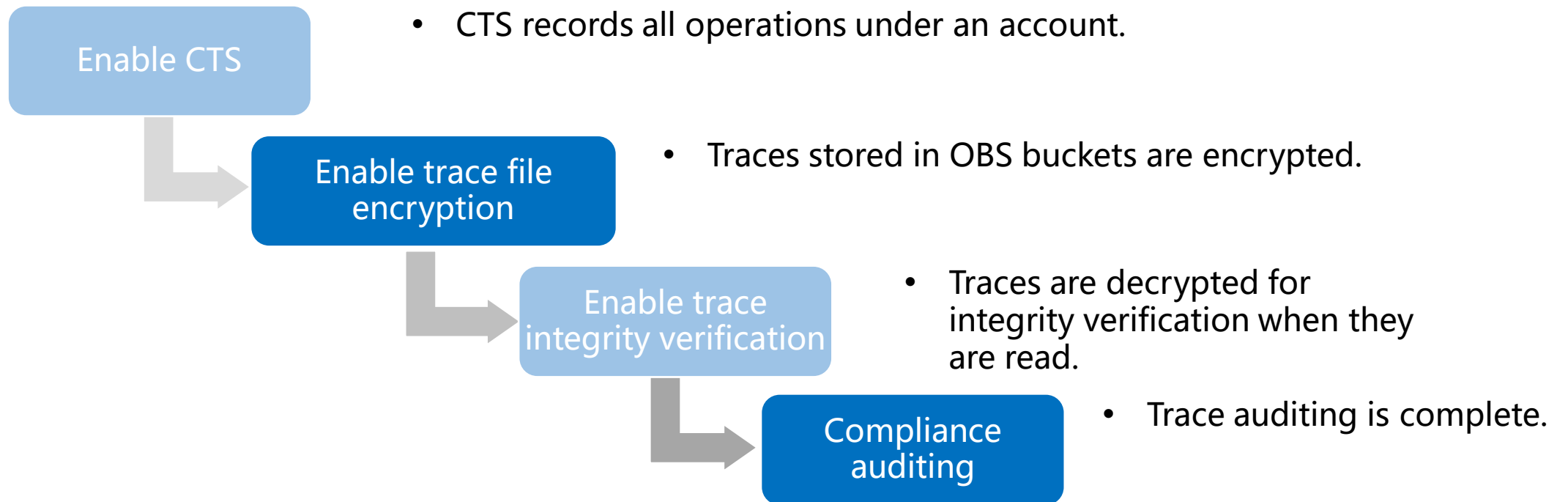
# Using CTS: Fault Locating

- If a fault occurs, you can view CTS traces to figure out the cause and rectify the fault quickly. For example, you can quickly determine that the deletion of a system volume during configuration led to a failure in ECS capacity expansion.



# Using CTS: Compliance Auditing

- CTS records operations and allows you to query operation records, making it easy to comply with internal policies and regulatory standards. This helps you meet the requirements of IT compliance certifications (for example, certifications for financial cloud and trusted cloud).

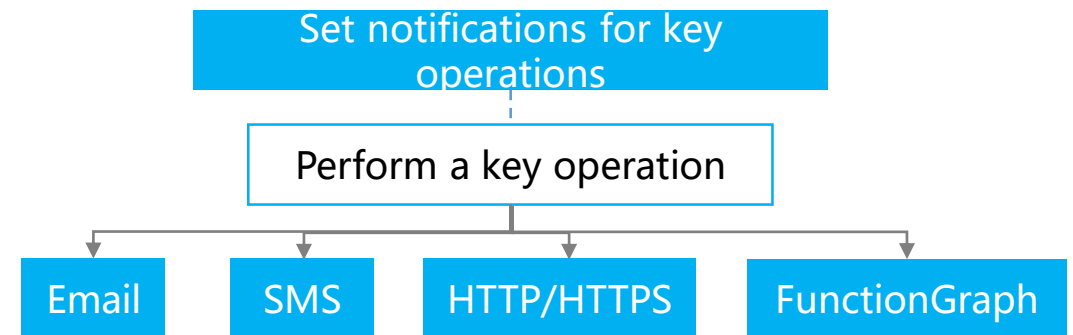


# Using CTS: Key Event Notifications

- Traces can be set as triggers for notifications sent to emails, mobile phones, and system interfaces or as triggers to invoke FunctionGraph functions.

Major functions:

- You can be alerted of changes to core system components, networking, and security configurations so that risks can be detected and mitigated as soon as possible.
- Traces collected by CTS can be synchronized to your own audit systems through HTTP/HTTPS notifications for independent auditing.
- FunctionGraph can be triggered by traces to execute specific functions.



# Quiz

1. Cloud Eye is a free cloud service.

True

False

2. Which of the following are scenarios of CTS?

A. Resource tracking

B. Compliance auditing

C. Fault locating

D. Security analysis



# Summary

- O&M services play an important role in ensuring that platforms are secure and operate normally. We can use CTS to better manage platforms, and use Cloud Eye to monitor platforms in real time. With LTS, we can obtain logs in real time and evaluate and eliminate potential risks.

# Recommendations

- Huawei Learning
  - <https://e.huawei.com/en/talent/#/>
- HUAWEI CLOUD Help Center
  - <https://support.huaweicloud.com/intl/en-us/help-novice.html>

# Acronyms and Abbreviations

CTS: Cloud Trace Service

ECS: Elastic Cloud Server

IT: Internet technology

ICT: Information and communications technology

IAM: Identity and Access Management

LTS: Log Tank Service

OBS: Object Storage Service

SOA: Service-oriented architecture

# Acronyms and Abbreviations

SQL: Structured query language

VPC: Virtual Private Cloud

# Thank you.

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每个组织,构建万物互联的智能世界.

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