Application Performance Management 2.0

Service Overview

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1 What Is APM

O&M Challenges

In the cloud era, applications in the microservice architecture are increasingly diversified, bringing many application exceptions. Application O&M faces the following challenges:

- Distributed applications have complex relationships. As a result, it is hard to ensure normal application running, and quickly locate faults and performance bottlenecks.
- Users choose to leave due to poor experience. If O&M personnel cannot detect and trace services with poor experience in real time, or diagnose application exceptions in a timely manner, user experience will be greatly affected.
- There are a large number of widely distributed applications in the service system. Calls across systems, regions, and applications are frequent. Enterprises urgently need to reduce application management and O&M costs and improve O&M efficiency.

Introduction to APM

Huawei Cloud Application Performance Management (APM) helps O&M personnel quickly identify application performance bottlenecks and locate root causes of faults, ensuring user experience.

You only need to install Agents for applications so that APM can monitor them in an all-round manner. APM can quickly locate error APIs and slow APIs, reproduce calling parameters, and detect system bottlenecks, facilitating online diagnosis. Currently, APM supports Java applications. The following table lists the application monitoring capabilities of APM.

Table 1-1 APM monitoring capabilities

Capability	Description
Non-intrusive collection of application performance data	You do not need to modify application code. Instead, you only need to deploy an APM Agent package and modify application startup parameters to monitor applications.
Application metric monitoring	APM automatically monitors application metrics, such as JVM, JavaMethod, URL, Exception, Tomcat, HttpClient, MySQL, Redis, and Kafka.
Application topology	APM automatically generates call relationships between distributed applications based on dynamic analysis and intelligent computing of remote procedure call (RPC) information.
Tracing	After multiple applications are connected to APM, APM automatically samples requests, and collects the call relationships between services and the health status of intermediate calls for automatic tracing.
Metric drill-down analysis	APM enables you to drill down and analyze metrics such as application response time, number of requests, and error rate, and view metrics by application, component, environment, database, middleware, or other dimensions.
Error or slow URL tracing	APM identifies error or slow URLs based on URL tracing, and automatically associates them with corresponding APIs, such as SQL and MQ APIs.

1. Access to APM: Applications need to implement AK/SK authentication to connect to APM.
2. O&M data collection: APM can collect data about applications, basic resources, and user experience from Agents in non-intrusive mode.
3. Service implementation: APM supports application metric monitoring, application topology, tracing, and intelligent alarm reporting.
4. Service expansion:
   - You can quickly diagnose application performance exceptions based on the application topology and tracing of APM, and make judgments based on the application O&M metrics of Application Operations Management (AOM).
   - After identifying performance bottlenecks, you can use CodeArts PerfTest to implement association analysis and generate performance reports.
   - Based on the historical metric data learned using intelligent algorithms, APM associates metrics for analysis from multiple dimensions, extracts the context data of both normal and abnormal services for comparison, and locates root causes through cluster analysis.

Advantages

Ease of Use

Connects to applications without having to modify code, and collects data in a non-intrusive mode.

- APM Agents collect service call, service inventory, and call KPI data.

High Performance

Delivers high throughput (hundreds of millions of API calls), ensuring premium experience.

Open Ecosystem

Provides open APIs to query O&M data, offers collection standards, and supports independent development.

Intelligent Analysis

Reports alarms using Artificial Intelligence (AI) threshold detection and machine learning based on historical baseline data, and supports root cause analysis.

2 Functions

APM manages cloud application performance and provides application metric monitoring, tracing, application topology, URL tracing analysis, and intelligent alarm reporting.

Application Metric Monitoring

This function enables you to monitor the overall health status of applications. APM Agents collect metrics of JVM, GC, service calls, exceptions, external calls, database access, and middleware of Java applications, helping you monitor application running.

Tracing

APM comprehensively monitors calls and displays service execution traces and statuses, helping you quickly locate performance bottlenecks and faults.

- In the displayed trace list, click the target trace to view its basic information.
- On the trace details page, you can view the trace's complete information, including the local method stack and remote call relationships.

Application Topology

There are two types of application topologies:

- Single-component topology: topology of a single component under a certain environment. You can also view the call relationships of direct and indirect upstream and downstream components.
- Global application topology: topology of some or all components under an application.

The topology displays the call relationships between services within a period. The statistics can be collected from the caller or the callee. You can also view the trend. On the topology, you can view the call relationships between services and check whether the calls between services are normal to quickly locate faults. The application relationships, call data (service and instance metrics), and health status are clearly displayed.

URL Tracing

If you need to find out the call relationships of an important application (for example, calling an e-commerce system's API to create orders), use URL tracing analysis. In APM, URL tracing consumes a large number of resources. Therefore, an entry URL will not be added for tracing by default. However, you can set that if necessary. APM has a limit on the total number of URLs added for tracing. It focuses on tracing the downstream calls for the APIs that are added for tracing. Through URL tracing, you can monitor the call relationships between important APIs and downstream services, and detect problems more precisely.

Resource Tag Management

You can tag resources under your account for classification.

Tag Management

You can add tags for different environments and applications for easy management.

Intelligent Alarm Reporting

When an application connected to APM meets a preset alarm condition, an alarm is triggered and reported. In this way, you can quickly learn about service exceptions and rectify faults to prevent loss.

APM allows you to configure alarm templates. You can create multiple alarm policies under a template and bind them to nodes.

For intelligent alarm reporting, application alarms can be sent to specified terminals by SMS, function, or email.

Agent Management

You can view the deployment and running statuses of the Agents that are connected to APM, and to stop, start, or delete them.

Configuration Management

Configuration Management consists of **Collection Center** and **Data Masking**.

- **Collection Center**: displays collectors in a centralized manner. You can view and manage various collectors, metrics, and collection parameters supported by APM.
- **Data Masking**: You can set data masking policies. The data reported using APM 2.0 APIs will be masked based on the policies you set.

System Management

System Management consists of **Access Keys**, **General Configuration**, and **Agent Count**.

- **Access Keys**: Access Key ID (AK) and Secret Access Key (SK) are your long-term identity credentials. JavaAgents report data with an AK. An AK is used

together with an SK to sign requests cryptographically, ensuring that the requests are secret, complete, and correct.

- **General Configuration**: You can set the maximum number of rows for data collection, set the slow request threshold, and specify whether to stop collecting data through bytecode instrumentation.
- **Agent Count**: APM can count the Agents used by tenants. You can view the number of Agents by time, region, or Agent type.

3 Application Scenarios

APM is widely used. The following lists some typical scenarios.

Diagnosis of Application Exceptions

Pain Points

In the distributed microservice architecture, enterprises can develop diverse applications efficiently, but face great challenges in traditional O&M and diagnosis. An e-commerce application may face the following problems:

- Difficult fault locating

  After receiving the feedback from customers, customer service personnel submit problems to technical personnel for troubleshooting. In the distributed microservice architecture, a request usually undergoes multiple services/nodes before a result is returned. If a fault occurs, O&M personnel need to repeatedly view logs on multiple hosts to locate the fault. Even for simple problems, troubleshooting requires cooperation from multiple teams.

- Difficult architecture sort-out

  When service logic becomes complex, it is difficult to find out the downstream services (databases, HTTP APIs, and caches) that an application depends on, and external services that depend on the application from the code perspective. It is also difficult to sort out the service logic, manage the architecture, and plan capacities. For example, enterprises are hard to determine the number of hosts required for online promotion activities.

Service Implementation

APM can diagnose exceptions in large distributed applications. When an application breaks down or a request fails, you can locate faults in minutes through topologies and drill-downs.

- Visible topology: Abnormal application instances can be automatically discovered on the topology.
- Tracing: You can locate root causes in code through drill-downs after identifying abnormal applications.
- SQL analysis: APM displays graphs of key metrics (such as number of SQL statement calls, latency, and number of errors), and supports analysis of database performance problems caused by abnormal SQL statements.

User Experience Management

Pain Points

In the Internet era where user experience is of crucial importance, you cannot obtain user access information even if backend services run stably. It is much more difficult to locate frontend problems that occur occasionally. After a system goes online, if users cannot access the system due to errors and APM fails to obtain the information in time, lots of users will choose to leave. If users report page problems, how can APM reproduce the problems immediately? How can error details be obtained for fast troubleshooting?

Service Implementation

APM analyzes the complete process (user request > server > database > server > user request) of application transactions in real time, enabling you to monitor comprehensive user experience in real time. For transactions with poor user experience, locate problems through topologies and tracing.

- Application KPI analysis: KPIs such as throughput, latency, and call success rate are displayed, so that you can monitor user experience easily.
- Full-link performance tracing: Web services, caches, and databases are traced, so that you can detect performance bottlenecks quickly.

Intelligent Diagnosis

Pain Points

Massive services bring abundant but unassociated application O&M data, including hundreds of monitoring metrics, KPI data, and tracing data. How can metric and alarm data be associated for analysis from the application, component, or URL tracing perspective? How can possible causes be provided for exceptions based on the historical data and O&M experience library?

Service Implementation

APM supports automatic detection of faults using machine learning algorithms, and intelligent diagnosis. When an exception is found during URL tracing, APM learns historical metric data based on intelligent algorithms, associates exception metrics for multi-dimensional analysis, extracts characteristics of context data (such as resources, parameters, and call structures) for both normal and abnormal services, and locate root causes through cluster analysis.

4 Basic Concepts

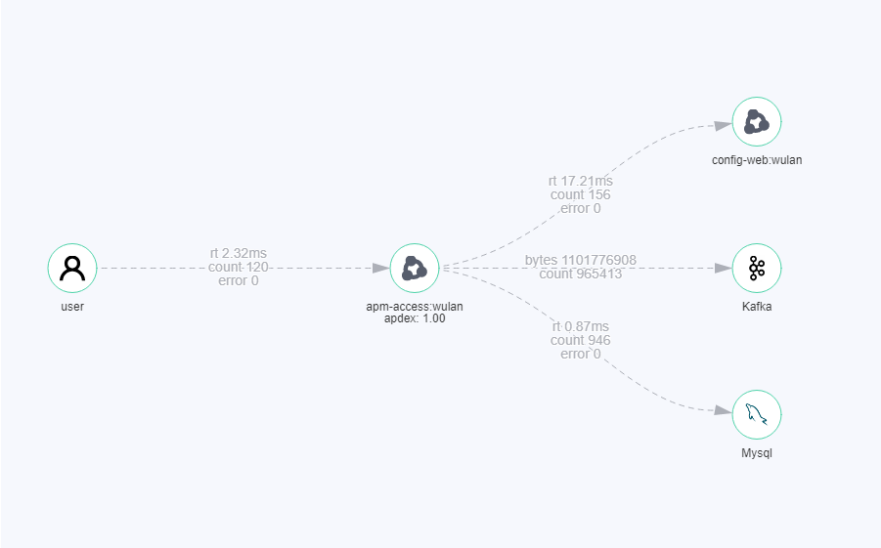
Application Topology

A topology graphically displays call and dependency relationships between applications. It is composed of circles, lines with arrows, and resources. Each line with an arrow represents a call relationship. The number of requests, average response time, and the number of errors are displayed above the line. Different colors indicate different RT ranges, helping you quickly detect and locate faults.

NOTE

- Database: When the database call time is greater than or equal to 100 ms, the value turns yellow. When this time is greater than or equal to 200 ms, the value turns red.
- Cache: When the cache call time is greater than or equal to 10 ms, the value turns yellow. When this time is greater than or equal to 30 ms, the value turns red.
- Other API calls: When the API call time is greater than or equal to 500 ms, the value turns yellow. When this time is greater than or equal to 1000 ms, the value turns red.
- If the number of errors is greater than 0, the value turns red.

Figure 4-1 Application topology



Tracing

By tracing and recording application calls, APM displays the execution traces and statuses of application requests in systems, so that you can quickly locate performance bottlenecks and faults.

APM Agent

APM Agents use bytecode enhancement technology to collect application performance data in real time. They run on the server where applications are deployed. For details about data collection and usage, see **APM Service Agreement**. Before using APM, ensure that APM Agents have been installed.

URL Tracing

URL tracing is to trace the call relationship of an application. For example, the complete process of calling an e-commerce system's API to create orders is "user request > web server > database > web server > user request."

If a URL is added for tracing, APM will focus on tracing its downstream calls. Through URL tracing, you can monitor the call relationships between important APIs and downstream services, and detect problems more precisely.

Apdex

Apdex is an open standard developed by the Apdex alliance. It defines a standard method to measure application performance. The Apdex standard converts the application response time into user satisfaction with application performance in the range of 0 to 1.

- Apdex principle

Apdex defines the threshold "T" for application response time. "T" is determined based on performance expectations. Based on the actual response time and "T", user experience can be categorized as follows:

Satisfied: indicates that the actual response time is shorter than or equal to "T". For example, if "T" is 1.5s and the actual response time is 1s, user experience is satisfied.

Tolerable: indicates that the actual response time is greater than "T", but shorter than or equal to "4T". For example, if "T" is 1s, the tolerable upper threshold for the response time is 4s.

Frustrated: indicates that the actual response time is greater than "4T".

- Apdex calculation

  In APM, the Apdex threshold is the maximum response time that makes users satisfied. The application response latency is the service latency. The Apdex value ranges from 0 to 1 and is calculated as follows:

Apdex = (Number of satisfied samples + Number of tolerable samples x 0.5)/ Total number of samples

CMDB

Configuration Management Database (CMDB) structures and displays application resource configuration, so that you can better monitor and manage applications. It consists of:

- **Application** (global concept): refers to a logical unit. You can view the same application information in all regions. For example, an independent functional module under an account can be regarded as an application.
- **Sub-application** (global concept): similar to a folder. You can create up to three layers of sub-applications under an application.
- **Component** (global concept): refers to a program or microservice. It is generally used together with environments. A component can contain one or more environments. For example, an order app can be deployed in the function test environment, pressure test environment, pre-release environment, or live network environment.
- **Environment**: Components or programs with different configurations are deployed in different environments. Each environment has its own region attribute. You can filter environments by region. You can also add one or more tags to an environment and filter environments by tag.
- **Instance**: refers to a process in an environment. It is named in the format of "host name+IP address+instance name." An environment is usually deployed on different hosts or containers. If an environment is deployed on one host, differentiation by instance is supported.
- **Environment tag**: an attribute for filtering environments. Different environments may have the same tag. Tags carry public configuration capabilities. For example, the configuration set on a tag can be shared by the environments with the same tag. Tags defined for environments of one application cannot be applied to other applications.

5 Edition Differences

APM provides basic and enterprise editions and supports interconnection with Java applications. The following table lists the functions supported by each edition.

Edition	Free	Enterprise
Description	Free of charge. Up to 10 Agents can be connected. Reactivate them every 15 days.	All functions are open.
Data storage duration	7 days	30 days
Application topology	√	√
Tracing	√	√
Cross-region tracing	√	√
Metric monitoring	√	√
URL tracing analysis	√	√
Alarm	√	√
CMDB	√	√
Note: **√** indicates supported, and **x** indicates not supported.		

NOTE

The enterprise edition cannot be downgraded back to the free edition (basic edition).

6 Permissions Management

If you need to assign different permissions to employees in your enterprise to access your APM resources, Identity and Access Management (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 cloud resources.

With IAM, you can use your Huawei Cloud account to create IAM users for your employees, and assign permissions to the users to control their access to specific resources. For example, some software developers in your enterprise need to use APM resources but cannot delete them or perform any high-risk operations. To achieve this result, you can create IAM users for the software developers and grant them only the permissions required for using APM resources.

If your Huawei Cloud account does not need individual IAM users for permissions management, you may skip over this chapter.

IAM can be used free of charge. You pay only for the resources in your account. For more information about IAM, see **IAM Service Overview**.

APM Permissions

By default, new IAM users do not have any permissions assigned. You need to add a user to one or more groups, and assign permissions policies or roles to these groups. The user then inherits permissions from the groups it is a member of. This process is called authorization. After authorization, the user can perform specified operations on APM.

APM is a global service. By default, the APM permissions granted to a user take effect in all regions supported by APM. APM resources are isolated by tenant. All users under a tenant share resources. To isolate resources, use enterprise projects.

APM is a global service and can be accessed without specifying a physical region. During authorization, choose **Enterprise** > **Project Management** to set permissions.

Table 6-1 lists all the system permissions supported by APM.

Table 6-1 System permissions supported by APM

Role	Description	Category
APM FullAccess	Full permissions for APM	System-defined policy
APM ReadOnlyAccess	Read-only permissions for APM	System-defined policy

Table 6-2 lists the common operations supported by each system-defined policy or role of APM. Choose policies or roles as required.

Table 6-2 Common operations supported by each system-defined policy or role of APM

Operation	APM FullAccess	APM ReadOnlyAccess
Querying the alarm list	√	√
Querying alarm details	√	√
Querying alarm notification details	√	√
Obtaining application configuration	√	√
Creating application configuration	√	x
Deleting application configuration	√	x
Modifying application configuration	√	x
Querying a tag	√	√
Adding a tag	√	x
Deleting a tag	√	x
Modifying a tag	√	x
Querying a resource tag	√	√
Adding a resource tag	√	x
Deleting a resource tag	√	x
Modifying a resource tag	√	x
Querying an alarm template	√	√

Operation	APM FullAccess	APM ReadOnlyAccess
Adding an alarm template	√	x
Deleting an alarm template	√	x
Modifying an alarm template	√	x
Obtaining a notification	√	√
Deleting a notification	√	x
Adding a notification	√	x
Modifying a notification	√	x
Obtaining URL tracing configuration	√	√
Deleting URL tracing configuration	√	x
Adding a URL for tracing	√	x
Modifying URL tracing configuration	√	x
Querying a URL tracing view	√	√
Obtaining the URL tracing list	√	√
Obtaining the global topology	√	√
Querying a sub-application	√	√
Querying environment configuration	√	√
Adding environment configuration	√	x
Deleting environment configuration	√	x
Modifying environment configuration	√	x
Obtaining an instance	√	√
Deleting an instance	√	x
Modifying an instance	√	x

Operation	APM FullAccess	APM ReadOnlyAccess
Querying a monitoring item	√	√
Modifying a monitoring item	√	x
Obtaining collection status	√	√
Obtaining a custom alarm policy	√	√
Deleting a custom alarm policy	√	x
Modifying a custom alarm policy	√	x
Creating a custom alarm policy	√	x
Obtaining the environment topology	√	√
Obtaining a metric view	√	√
Obtaining the trace list	√	√
Obtaining trace details	√	√
Obtaining collector information	√	√
Obtaining an access key	√	√
Modifying an access key	√	x
Deleting an access key	√	x
Adding an access key	√	x
Obtaining general configuration	√	√
Modifying general configuration	√	x
Querying Agent statistics	√	√

7 Metric Overview

A metric describes resource performance data or status. It consists of the metric type, name, and description, data type, and default aggregation mode.

NOTE

For the default aggregation mode, **LAST** indicates the value of the latest metric collected. **SUM** indicates the sum of collected metrics. **MAX** indicates the maximum value of collected metrics. **AVG** indicates the average value of collected metrics.

7.1 Exception

This section describes the types, names, and meanings of exception metrics collected by APM.

Table 7-1 Exception collection parameters

Parameter	Data Type	Application Type	Default Value	Supported Start Agent Version	Supported End Agent Version	Description
Determine Trace Exception upon Log Error Detection	radio	JAVA	true	2.0.0	-	Whether to mark a trace as abnormal after a log error is collected.
Print Trace ID or Not	radio	JAVA	false	2.3.19	-	Whether to add trace IDs during log printing.

Table 7-2 Exception metric description

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception logs (exception: statistics about all exception logs)	className	Exception Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	logType	Log Type	Exception log type	-	ENUM	LAST
	count	Count	Number of times that an exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack	-	CLOB	LAST
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Log version (logVersion: package version of the log component)	logType	Log Type	Log type	-	ENUM	LAST
	version	Log Version	Log version	-	STRING	LAST

7.2 Basic Monitoring

APM collects basic metrics, covering GC, JavaMethod, JVM, JVMInfo, Netty memory, and threads. This section describes the types, names, and meanings of basic metrics collected by APM.

7.2.1 GC Monitoring

This section describes the types, names, and meanings of GC metrics collected by APM.

Table 7-3 GC metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
GC statistics (**gc**)	fullGCCount	Full GC Times	Number of full GC times in a collection period	-	INT	SUM
	fullGCCountTotal	Total Full GC Times	Total number of full GC times	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	fullGCTime	Full GC Time	Full GC duration in a collection period	ms	INT	SUM
	fullGCTimeTotal	Total Full GC Time	Total full GC duration	ms	INT	SUM
	fullGCMBeanName	Full GC Recycler	Name of the full GC recycler	-	STRING	LAST
	youngGCCount	Young GC Times	Number of young GC times in a collection period	-	INT	SUM
	youngGCCountTotal	Total Young GC Times	Total number of young GC times	-	INT	SUM
	youngGCTime	Young GC Time	Young GC duration in a collection period	ms	INT	SUM
	youngGCTimeTotal	Total Young GC Time	Total young GC duration	ms	INT	SUM
	youngGCMBeanName	Young GC Recycler	Name of the young GC recycler	-	STRING	LAST
GC details (**gcdetail**)	action	GC Type	GC type, which can be **major** or **minor**	-	ENUM	LAST
	cause	GC Cause	GC cause	-	ENUM	LAST
	name	GC Name	GC collector name	-	STRING	LAST
	count	Count	Number of times that GC has occurred	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	GC Time	GC duration	ms	INT	SUM
	maxTime	Max. GC Time	Time consumed by the slowest GC	ms	INT	MAX
	detail	GC Details	Details about the slowest GC	-	CLOB	LAST

7.2.2 JavaMethod

This section describes the types, names, and meanings of JavaMethod metrics collected by APM.

Table 7-4 JavaMethod collection parameter

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Method Interception Configuration	obj_array	JAVA	-	2.0.0	-	Specify methods to intercept. Use commas (,) to separate methods. If this parameter is left blank, all public methods will be intercepted by default.

Table 7-5 JavaMethod metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Java method (**method**: Method call statistics are collected based on the configured Java method names.)	class	Class	Class	-	ENUM	LAST
	method	Method	Method	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the method	-	INT	MAX
	errorCount	Errors	Number of times that the method fails to be called	-	INT	SUM
	invokeCount	Calls	Number of times that the method is called	-	INT	SUM
	lastError	Error Message	Error information of the method	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the method	ms	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	totalTime	Total RT	Total response time of the method	ms	INT	SUM

7.2.3 JVM Monitoring

This section describes the types, names, and meanings of JVM metrics collected by APM.

Table 7-6 Collection parameters for JVM monitoring

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Trace Stack Collection Threshold	integer	JAVA	0	2.0.4	-	Stacks will be automatically printed when the request latency exceeds the threshold.

Table 7-7 JVM monitoring metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Class loading (**classLoading**: JVM class loading statistics)	loadedClassCount	Loaded Classes	Number of loaded classes	-	INT	SUM
	totalLoadedClassCount	Total Loaded Classes	Total number of loaded classes	-	INT	SUM
	unloadedClassCount	Unloaded Classes	Number of unloaded classes	-	INT	SUM
Compilation (**compile**: JVM class compilation time statistics)	compilationTime	Compilation Time	Compilation time in a collection period	ms	INT	SUM
	totalCompilationTime	Total Compilation Time	Total compilation time	ms	INT	SUM
CPU (**CPU**: CPU usage statistics of JVM processes)	cpuRatio	CPU Usage	CPU usage of the Java process	%	DOUBLE	AVG
	cpuRatioMax	Max. CPU Usage	Maximum CPU usage of the Java process	%	DOUBLE	MAX
	cpuTimeInterval	CPU Time	CPU time of the Java process in the collection interval	ns	INT	SUM
	processorCount	Processors	Number of processors	-	INT	SUM
	systemTimeInterval	Collection Interval	Collection interval	ns	INT	SUM
	totalCpuTime	Total CPU Time	Total CPU time	ns	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Memory (**memory**: JVM memory statistics)	directMemoryUsage	Direct Memory	Used direct memory	M	INT	AVG
	directMemoryCapacity	Direct Memory Capacity	Total direct memory capacity	M	INT	AVG
	heapMemoryUsage	Heap Memory	Used heap memory	M	INT	AVG
	nonHeapMemoryUsage	Non-Heap Memory	Used non-heap memory	M	INT	AVG
	objectPendingFinalizationCount	Objects Being Recycled	Number of objects that are being recycled at the time of collection	-	INT	SUM
Memory pool (**memoryPool**: statistics collected by JVM memory pool)	committed	Available Memory	Available memory	M	INT	SUM
	init	Initialized Memory	Initialized memory	M	INT	SUM
	max	Max. Memory	Maximum memory	M	INT	SUM
	name	Memory Pool Name	Memory pool name	-	ENUM	LAST
	used	Used Memory	Used memory	M	INT	SUM
Thread (**thread**: JVM thread statistics)	currentThreadCpuTime	Thread CPU Time	CPU time of the current thread	-	INT	SUM
	currentThreadUserTime	Thread User Time	User time of the current thread	-	INT	SUM
	daemonThreadCount	Daemon Threads	Number of daemon threads	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	deadlockedThreadsCount	Deadlock Threads	Number of deadlock threads	-	INT	SUM
	monitorDeadlockedThreads	Current Deadlock Threads	ID list of current deadlock threads	-	INT	SUM
	peakThreadCount	Max. Threads Executed	Maximum number of threads executed	-	INT	SUM
	threadCount	Current Threads	Number of current threads	-	INT	SUM
	totalStartedThreadCount	Total Threads	Total number of threads that are started since the Java process is started	-	INT	SUM
	newThreadCount	Initial Threads	Number of threads in the initial state	-	INT	SUM
	runnableThreadCount	Running Threads	Number of running threads	-	INT	SUM
	blockedThreadCount	Blocked Threads	Number of blocked threads	-	INT	SUM
	waitingThreadCount	Pending Threads	Number of pending threads	-	INT	SUM
	timedWaitingThreadCount	Timed-out Threads	Number of threads that timed out	-	INT	SUM
	terminatedThreadCount	Terminated Threads	Number of terminated threads	-	INT	SUM

7.2.4 JVMInfo

This section describes the types, names, and meanings of JVMInfo metrics collected by APM.

Table 7-8 JVMInfo metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Basic JVM information (**info**: JVM and JavaAgent basic information)	arch	CPU Architecture	CPU architecture	-	STRING	LAST
	availableProcessors	Processors	Number of processors	-	INT	LAST
	classPath	Class Path	Class path	-	STRING	LAST
	fileEncode	File Code	JVM file code	-	STRING	LAST
	inputArguments	Input Arguments	JVM startup parameters	-	STRING	LAST
	javaCollectorVersion	Collector Version	Collector version	-	STRING	LAST
	javaHome	Java Home Path	Java home path	-	STRING	LAST
	javaLibraryPath	Class Library Path	Java class library path	-	STRING	LAST
	javaSpecificationVersion	Specification Version	Java specification version	-	STRING	LAST
	javaVersion	Version	Java version	-	STRING	LAST
	jvm	Mode	Mode	-	STRING	LAST
	name	Name	Server and process names	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	osName	OS Name	OS name	-	STRING	LAST
	osVersion	OS Version	OS version	-	STRING	LAST
	pid	Process ID	Process ID	-	STRING	LAST
	sdkVersion	SDK Version	SDK version	-	STRING	LAST
	specName	VM Specification Name	Name of the VM specifications	-	STRING	LAST
	specVendor	VM Specification Vendor	Vendor that formulates the VM specifications	-	STRING	LAST
	specVersion	Specification Version	Version of the specification	-	STRING	LAST
	startTime	Start Time	JVM startup time	-	DATETIME	LAST
	systemLoadAverage	Load Value	Average system load	-	DOUBLE	LAST
	uptime	Duration	VM running time	ms	INT	LAST
	vmName	VM Name	Name of the VM	-	STRING	LAST
	vmVendor	VM Vendor	VM vendor	-	STRING	LAST
	vmVersion	VM Version	VM version	-	STRING	LAST

7.2.5 Netty Memory

This section describes the types, names, and meanings of Netty memory metrics collected by APM.

Table 7-9 Netty memory metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Memory (**memory**: memory metrics)	directMemoryUsage	Used Direct Memory	Used direct memory	-	INT	AVG
	maxDirectMemory	Max. Direct Memory	Maximum direct memory	-	INT	MAX
Exception (**exception**)	causeType	Class	Class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Count	-	INT	SUM
	message	Exception Message	Exception message	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack	-	CLOB	LAST

7.2.6 Threads

This section describes the types, names, and meanings of thread metrics collected by APM.

Table 7-10 Thread collection parameters

Parameter	Data Type	Application Type	Default Value	Supported Start Agent Version	Supported End Agent Version	Description
Max. Rows of Thread Details	integer	JAVA	1	2.3.19	-	Maximum number of rows of thread details. You can set it to up to 50.

Table 7-11 Thread metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Thread details (**threadDetail**)	threadName	Thread Name	Thread name	-	ENUM	LAST
	memory	Memory	Memory	-	INT	SUM
	stack	Thread Stack	Thread stack	-	CLOB	LAST
	ids	Thread ID	Thread ID	-	STRING	LAST
	cpuTime	Thread CPU Time	Thread CPU time	-	INT	SUM
	count	Threads	Number of threads	-	INT	LAST

7.3 Databases

APM collects metrics from the C3P0 connection pool, Cassandra, ClickHouse database, DBCP connection pool, Druid connection pool, EsRestClient, GaussDB database, HBase, Hikari connection pool, Jetcd, and MongoDB, MySQL database, ObsClient, Oracle database, and Postgresql database. This section describes the types, names, and meanings of database metrics collected by APM.

7.3.1 C3P0 Connection Pool Monitoring

This section describes the types, names, and meanings of C3P0 connection pool metrics collected by APM.

Table 7-12 Collection parameters for C3P0 connection pool monitoring

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Threshold (ms) for Reporting Connection Trace	integer	JAVA	1	2.1.3	-	Threshold for reporting getConnection method traces. If the threshold is not exceeded, such traces will not be reported.
Obtain Pool Info or Not	radio	JAVA	false	2.1.3	-	Whether to obtain pool information when getting connections

Table 7-13 C3P0 connection pool metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Data source (**dataSource**)	url	URL	URL	-	ENUM	LAST
	driverClass	Driver	Driver	-	STRING	LAST
	initialPoolSize	Initialized Connections	Number of initialized connections	-	INT	LAST
	minPoolSize	Min. Pool Size	Minimum connection pool size	-	INT	LAST
	maxPoolSize	Max. Pool Size	Maximum connection pool size	-	INT	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	numIdleConnections	Idle Connections	Number of idle connections	-	INT	LAST
	numBusyConnections	Active Connections	Number of active connections	-	INT	LAST
	numConnections	Total Connections	Total number of connections	-	INT	LAST
	maxIdleTime	Max. Connection Idle Time	Maximum connection idle time	-	INT	LAST
	idleConnectionTestPeriod	Idle Connection Check Interval	Interval for checking for idle connections	-	INT	LAST
	testConnectionOnCheckout	Connection Validity Check During Check-Out	Connection validity check during check-out	-	STRING	LAST
	testConnectionOnCheckin	Connection Validity Check During Check-In	Connection validity check during check-in	-	STRING	LAST
	acquireRetryAttempts	Connection Retries	Number of Connection retry times	-	INT	LAST
	acquireRetryDelay	Connection Retry Interval	Connection retry interval	-	INT	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	acquireIncrement	Connections Created If No Connection Exists	Number of connections created if no connection exists	-	INT	LAST
Connection details (**connection**)	url	Connection Address	Connection address	-	ENUM	LAST
	invokeCount	Calls	Number of calls	-	INT	LAST
	totalTime	Total Time	Total time	-	INT	LAST
	errorCount	Errors	Number of errors	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
Version (**version**)	version	Version	Version	-	STRING	LAST
Exception (**exception**: C3P0 call exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

7.3.2 Cassandra Monitoring

This section describes the types, names, and meanings of Cassandra metrics collected by APM.

Table 7-14 Collection parameters for Cassandra monitoring

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Threshold (ms) for Reporting Connection Trace	integer	JAVA	1	2.2.9	-	Threshold for reporting borrowConnection() method traces. If the threshold is not exceeded, such traces will not be reported.
Collect Original CQL Statement or Not	radio	JAVA	false	2.2.9	-	Whether to collect original CQL statements

Table 7-15 Cassandra metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
CQL call (**Cql**)	cql	cql	Executed CQL Statement	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	maxTime	Maximum response time	-	INT	MAX
	queryRowCount	Read Rows	Number of read rows	-	INT	SUM
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	totalTime	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Cassandra node call (**node**)	node	Node Address	Node address	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	maxTime	Maximum response time	-	INT	MAX
	totalTime	totalTime	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Cassandra cluster call (**cluster**)	nodes	Cluster Node	Cluster node information	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	maxTime	Maximum response time	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	totalTime	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Connection details (**connection**)	host	Connected Host	Connected host	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total Time	Total time	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Exception (**exception**: Cassandra call exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	stackTrace	stackTrace	Exception stack information	-	CLOB	LAST
Cassandra summary (**total**: summary of Cassandra call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	queryRowCount	Total Read Rows	Total number of read rows	-	INT	SUM
	errorCount	Total Errors	Total number of errors	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
Cassandra version (**version**)	version	Version	Version	-	STRING	LAST

7.3.3 ClickHouse Database

This topic describes the types, names, and meanings of ClickHouse database metrics collected by APM.

Table 7-16 ClickHouse database collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Collect Original SQL Statement or Not	radio	JAVA	false	2.0.0	-	Whether to collect and report original SQL statements

Table 7-17 ClickHouse database metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Database connection (**connection**: APM counts SQL call statistics by database.)	db	Database	Database name	-	ENUM	LAST
	createdCount	Created Connections	Number of connections created by the database	-	INT	SUM
	currentCount	Current Connections	Current number of connections of the database	-	INT	SUM
	destroyedCount	Destroyed Connections	Number of the database's connections that have been destroyed	-	INT	SUM
	errorCount	Errors	Number of errors that the database encounters	-	INT	SUM
	invokeCount	Calls	Number of times that the database is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the database	-	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	readRowCount	Read Rows	Number of rows read from the database	-	INT	SUM
	updatedRowCount	Updated Rows	Number of rows updated in the database	-	INT	SUM
	totalTime	Total RT	Total response time of the database	-	INT	SUM
	slowestSql	Slowest SQL	Slowest SQL statement of the database in the collection period	-	STRING	LAST
Exception (**exception**: exception statistics about SQL calls)	causeType	Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Message	Exception message	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	sql	Exception SQL	SQL statement that encounters an exception	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Version (**version**: ClickHouse package version)	version	Version	Driver package version	-	STRING	LAST
SQL monitoring (**sql**: APM counts call statistics by SQL.)	sql	SQL ID	Unique ID of the SQL statement, which is used for alarm configuration	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the SQL statement	-	INT	MAX
	errorCount	Errors	Number of errors that the SQL statement encounters	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of times that the SQL statement is called	-	INT	SUM
	lastError	Error Message	SQL error information	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time of the SQL statement	-	INT	MAX
	readRowCount	Read Rows	Number of read rows of the SQL statement	-	INT	SUM
	runningCount	Ongoing Executions	Number of SQL statements that are being executed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	sqlString	SQL Statement	SQL statement	-	STRING	LAST
	totalTime	Total RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Number of updated rows of the SQL statement	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Summary (**total**: summary about SQL statement call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	errorCount	Errors	Total number of errors	-	INT	SUM
	readRowCount	Read Rows	Total number of read rows	-	INT	SUM
	totalTime	RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Total number of updated rows	-	INT	SUM

7.3.4 DBCP Connection Pool Monitoring

This section describes the types, names, and meanings of DBCP connection pool metrics collected by APM.

Table 7-18 DBCP connection pool collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Threshold (ms) for Reporting Connection Trace	integer	JAVA	1	2.1.3	-	Threshold for reporting getConnection method traces. If the threshold is not exceeded, such traces will not be reported.
Obtain Pool Info or Not	radio	JAVA	false	2.1.3	-	Whether to obtain pool information when getting connections

Table 7-19 DBCP connection pool metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Data source (**dataSource**)	url	url	url	-	ENUM	LAST
	driverClassName	Driver	Driver	-	STRING	LAST
	initialSize	Initialized Connections	Number of initialized connections	-	INT	LAST
	minIdle	Min. Idle Connections	Minimum number of idle connections in the pool	-	INT	LAST
	maxIdle	Max. Idle Connections	Maximum number of idle connections in the pool	-	INT	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTotal	Max. RT	Maximum response time	-	INT	LAST
	numIdle	Idle Connections	Number of idle connections	-	INT	LAST
	numActive	Active Connections	Number of active connections	-	INT	LAST
	maxWaitMillis	Max. Time for Waiting Connection to Be Reclaimed	Maximum time for a waiting connection to be reclaimed (when no connection is available) before an exception is thrown	-	INT	LAST
	testOnCreate	Validity Check Upon Connection Creation	Whether to check the validity of a connection after it is created	-	STRING	LAST
	testOnBorrow	Validity Check Before Obtaining Connection	Check whether a connection is valid before obtaining it from the connection pool.	-	STRING	LAST
	testWhileIdle	Idle Connection Validity Check	Whether to verify the validity of an idle connection when an application applies for it from the pool	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	timeBetweenEvictionRunsMillis	Interval for Checking Connection Validity	If **testOnBorrow** is set to **false** and **testWhileIdle** is set to **true**, the application checks whether the idle time of a connection is greater than **timeBetweenEvictionRunsMillis** before obtaining the connection. If it is greater than that value, the application checks whether the connection is valid.	-	INT	LAST
	removeAbandonedOnBorrow	Remove Discarded Connections When Obtaining Connections	Whether to remove discarded connections when obtaining connections. (The following conditions must be met: "getNumActive() > getMaxTotal() – 3" and "getNumIdle() < 2")	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	removeAbandonedOnMaintenance	Remove Discarded Connections During Maintenance	Whether to remove discarded connections in the maintenance cycle (when the eviction ends)	-	STRING	LAST
	removeAbandonedTimeout	Connection Removal Timeout	If a connection is not used within the specified timeout, it is regarded as a discarded connection and can be removed.	-	INT	LAST
Connection details (**connection**)	url	Connection Address	Connection address	-	ENUM	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total Time	Total time	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
Version (**version**)	version	Version	Version	-	STRING	LAST
Exception (**exception**: exception statistics of DBCP calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

7.3.5 Druid Connection Pool Monitoring

This section describes the types, names, and meanings of Druid connection pool metrics collected by APM.

Table 7-20 Druid connection pool collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Threshold (ms) for Reporting Connection Trace	integer	JAVA	1	2.1.3	-	Threshold for reporting getConnection method traces. If the threshold is not exceeded, such traces will not be reported.
Obtain Pool Info or Not	radio	JAVA	false	2.1.3	-	Whether to obtain pool information when getting connections

Table 7-21 Druid connection pool metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Data source (**dataSource**)	url	url	url	-	ENUM	LAST
	dbType	Database Type	Database type	-	STRING	LAST
	driverClassName	Driver	Driver	-	STRING	LAST
	initialSize	Initialized Connections	Number of initialized connections	-	INT	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	minIdle	Min. Idle Connections	Minimum number of idle connections in the pool	-	INT	LAST
	maxIdle	Max. Idle Connections	Maximum number of idle connections in the pool	-	INT	LAST
	maxActive	Max. Pool Size	Maximum connection pool size	-	INT	LAST
	waitThreadCount	Waiting Threads	Number of waiting threads	-	INT	LAST
	maxWaitThreadCount	Max. Waiting Threads	Maximum number of waiting threads	-	INT	LAST
	poolingCount	Pool Connections	Number of connections in the pool	-	INT	LAST
	poolingPeak	Max. Pool Connections	Maximum number of connections in the pool	-	INT	MAX
	activeCount	Active Connections	Number of active connections	-	INT	LAST
	activePeak	Max. Active Connections	Maximum number of active connections	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	logicConnectCount	Total Connections	Total number of connections	-	INT	SUM
	maxWait	Max. Waiting Time	Maximum waiting time of a connection	-	INT	LAST
	removeAbandoned	Automatically Reclaim Timeout Connections	Whether to automatically reclaim timeout connections	-	STRING	LAST
	removeAbandonedCount	Timeout Connection Reclaims	Number of times that timeout connections are reclaimed	-	INT	LAST
	removeAbandonedTimeoutMillis	Max. Connection Usage Duration	If a connection in the pool is not returned within the specified duration, the connection will be reclaimed.	-	INT	LAST
	testWhileIdle	Idle Connection Validity Check	Whether to verify the validity of an idle connection when an application applies for it from the pool	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	testOnBorrow	Validity Check Before Obtaining Connection	Check whether a connection is valid before obtaining it from the connection pool.	-	STRING	LAST
	testOnReturn	Validity Check Upon Connection Return	Whether to verify the validity of a connection when it is returned	-	STRING	LAST
	minEvictableIdleTimeMillis	Allowed Idle Time for Connection	Idle time that is allowed for connections in the pool	-	INT	LAST
	timeBetweenEvictionRunsMillis	Interval for Checking Idle Connection Validity	Interval for checking the validity of idle connections	-	INT	LAST
Connection details (**connection**)	url	Connection Address	Connection address	-	ENUM	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total Time	Total time	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
Version (**version**)	version	Version	Version	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of Druid calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

7.3.6 EsRestClient Monitoring

This section describes the types, names, and meanings of EsRestClient metrics collected by APM.

Table 7-22 EsRestClient collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Index Normalization Configuration	obj_array	JAVA	-	2.0.0	-	Implement "regex" matching and normalize the URL index.

Table 7-23 EsRestClient metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of EsRestClient calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Client information (**clientInfo**)	clientId	Client ID	Client ID	-	ENUM	LAST
	RestClientVersion	RestClient Version	RestClient version	-	STRING	LAST
	RestHighLevelClientVersion	RestHighLevelClient Version	RestHighLevelClient version	-	STRING	LAST
	poolId	HttpAsyncClient Connection Pool ID	HttpAsyncClient Connection pool ID	-	STRING	LAST
	esNodes	Cluster Node Information Set on Client	Cluster node information set on the client	-	STRING	LAST
	esDeadNodes	Disconnected Node	Disconnected node of the cluster	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
URL monitoring (**esClient**: APM counts URL call statistics by URL.)	clientId	clientId	RESTClient ID	-	ENUM	LAST
	url	URL	Called URL	-	ENUM	LAST
	method	HTTP Method	HTTP method of the URL	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the URL	-	INT	MAX
	errorCount	Errors	Number of call errors of the URL	-	INT	SUM
	definitiveFailureCount	Request Errors	Number of request errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	hostUri	hostUri	host uri	-	STRING	LAST
	invokeCount	Calls	Number of times that the URL is called	-	INT	SUM
	lastError	Error Message	Error details	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time of the called URL	-	INT	MAX
	totalTime	Total RT	Total response time of the called URL	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	retryCount	Retries	Request retry times	-	INT	SUM
Status code statistics (**code**: APM counts URL call statistics by status code.)	code	Status Code	Status code	-	ENUM	LAST
	url	URL	URL that returns the status code	-	STRING	LAST
	count	Count	Number of times that the status code has occurred	-	INT	SUM
EsRestClient summary (**total**: summary of EsRestClient call statistics)	definitiveFailureCount	Total Request Errors	Total number of request errors	-	INT	SUM
	invokeCount	Calls	Total number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
	retryCount	Total Request Retries	Total number of request retries	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
EsRestClient node call monitoring (**serverNode**)	serverAddr	Server Node	Server node information	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
URL monitoring (**invocation**: APM counts URL call statistics by URL.)	url	URL	Called URL	-	ENUM	LAST
	method	HTTP Method	HTTP method of the URL	-	ENUM	LAST
	client	Client Type	EsRestClient type	-	ENUM	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	concurrentMax	Max. Concurrency	Maximum concurrency of the URL	-	INT	MAX
	errorCount	Errors	Number of call errors of the URL	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	hostUri	Call Address	Called URL address	-	STRING	LAST
	invokeCount	Calls	Number of times that the URL is called	-	INT	SUM
	lastError	Error Message	Error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the called URL	-	INT	MAX
	responseCloseCount	responseCloseCount	Number of closed responses when the URL is called	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time of the called URL	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	envId	Cluster ID	Cluster ID corresponding to the called URL	-	STRING	LAST
EsRestClient cluster call (**cluster**)	esNodes	Cluster Node	Cluster node information	-	ENUM	LAST
	clientCount	Created RestClients	Number of RestClients that have been created	-	INT	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

7.3.7 GaussDB Database

This section describes the types, names, and meanings of GaussDB database metrics collected by APM.

Table 7-24 GaussDB database collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Collect Original SQL Statement or Not	radio	JAVA	false	2.2.8	-	Whether to collect and report original SQL statements

Table 7-25 GaussDB database metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Database connection (**connection**: APM counts SQL call statistics by database.)	db	Database	Database name	-	ENUM	LAST
	createdCount	Created Connections	Number of connections created by the database	-	INT	SUM
	currentCount	Current Connections	Current number of connections of the database	-	INT	SUM
	destroyedCount	Destroyed Connections	Number of the database's connections that have been destroyed	-	INT	SUM
	errorCount	Errors	Number of errors that the database encounters	-	INT	SUM
	invokeCount	Calls	Number of times that the database is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the database	-	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	ranges	Custom RT Range	Custom response time range	-	STRING	LAST
	readRowCount	Read Rows	Number of rows read from the database	-	INT	SUM
	updatedRowCount	Updated Rows	Number of rows updated in the database	-	INT	SUM
	totalTime	Total RT	Total response time of the database	-	INT	SUM
	slowestSql	Slowest SQL	Slowest SQL statement of the database in the collection period	-	STRING	LAST
Exception (**exception**: exception statistics about SQL calls)	causeType	Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Message	Exception message	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	sql	Exception SQL	SQL statement that encounters an exception	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Version (**version**: GaussDB package version)	version	Version	Driver package version	-	STRING	LAST
SQL monitoring (**sql**: APM counts call statistics by SQL.)	sql	SQL ID	Unique ID of the SQL statement, which is used for alarm configuration	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the SQL statement	-	INT	MAX
	errorCount	Errors	Number of errors that the SQL statement encounters	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of times that the SQL statement is called	-	INT	SUM
	lastError	Error Message	SQL error information	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the SQL statement	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	readRowCount	Read Rows	Number of read rows of the SQL statement	-	INT	SUM
	runningCount	Ongoing Executions	Number of SQL statements that are being executed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	sqlString	SQL Statement	SQL statement	-	STRING	LAST
	totalTime	Total RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Number of updated rows of the SQL statement	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	ranges	Custom RT Range	Custom response time range	-	STRING	LAST
Summary (**total**: summary about SQL statement call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	errorCount	Errors	Total number of errors	-	INT	SUM
	readRowCount	Read Rows	Total number of read rows	-	INT	SUM
	totalTime	RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Total number of updated rows	-	INT	SUM

7.3.8 HBase Monitoring

This section describes the types, names, and meanings of HBase metrics collected by APM.

Table 7-26 HBase metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of HBase calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
HBase call monitoring (**client**)	namespaceTable	Namespace:Table name	Namespace and table name corresponding to the HBase operation	-	ENUM	LAST
	command	Command	Command run on the HBase server	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	queryRowCount	Read Rows	Number of read rows	-	INT	SUM
	updateRowCount	Updated Rows	Number of updated rows	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	totalTime	Total RT	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
HBase version (**version**)	version	Version	Version	-	STRING	LAST
HBase summary (**total**: summary of HBase call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	queryRowCount	Total Read Rows	Total number of read rows	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	updateRowCount	Total Updated Rows	Total number of updated rows	-	INT	SUM
	errorCount	Total Errors	Total number of errors	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
HBase node call monitoring (**serverNode**: HBase server RPC call statistics)	serverAddr	Server Node	Server node information	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	totalTime	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
HBase cluster call monitoring (**cluster**: HBase cluster RPC call information)	clusterId	Cluster ID	Cluster ID	-	ENUM	LAST
	cachedServers	Client Cache Node Address	Client cache node address	-	STRING	LAST
	zkNodes	ZooKeeper Connection Address	ZooKeeper connection address	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

7.3.9 Hikari Connection Pool Monitoring

This section describes the types, names, and meanings of Hikari connection pool metrics collected by APM.

Table 7-27 Hikari connection pool collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Threshold (ms) for Reporting Connection Trace	integer	JAVA	1	2.1.0	-	Threshold for reporting getConnection method traces. If the threshold is not exceeded, such traces will not be reported.
Obtain Pool Info or Not	radio	JAVA	false	2.1.0	-	Whether to obtain pool information when getting connections

Table 7-28 Hikari connection pool metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Data source (**dataSource**)	url	url	url	-	ENUM	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maximumPoolSize	Max. Connections Allowed	Maximum number of connections that are allowed	-	INT	LAST
	leakDetectionThreshold	Max. Pool Size	Maximum connection pool size	-	INT	LAST
	validationTimeout	Waiting Threads	Number of waiting threads	-	INT	LAST
	maxLifetime	Maximum Waiting Threads	Maximum number of waiting threads	-	INT	LAST
	poolingCount	Pool Connections	Number of connections in the pool	-	INT	LAST
	poolingPeak	Max. Connections	Maximum number of connections in the pool	-	INT	MAX
	activeCount	Active Connections	Number of active connections	-	INT	LAST
	activePeak	Max. Active Connections	Maximum number of active connections	-	INT	MAX
	logicConnectCount	Total Connections	Total number of connections	-	INT	SUM
	maxWait	Max. Waiting Time	Max. Waiting Time	-	INT	LAST
	removeAbandoned	Automatically Reclaim Timeout Connections	Whether to automatically reclaim timeout connections	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	removeAbandonedCount	Timeout Connection Reclaims	Number of times that timeout connections are reclaimed	-	INT	LAST
	removeAbandonedTimeoutMillis	Max. Connection Usage Duration	If a connection in the pool is not returned within the specified duration, the connection will be reclaimed.	-	INT	LAST
	testWhileIdle	Idle Connection Validity Check	Whether to verify the validity of an idle connection when an application applies for it from the pool	-	STRING	LAST
	testOnBorrow	Validity Check Before Obtaining Connection	Check whether a connection is valid before obtaining it from the connection pool.	-	STRING	LAST
	testOnReturn	Validity Check Upon Connection Return	Whether to verify the validity of a connection when it is returned	-	STRING	LAST
	minEvictableIdleTimeMillis	Allowed Connection Idle Time	Idle time that is allowed for connections in the pool	-	INT	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	timeBetweenEvictionRunsMillis	Interval for Checking Idle Connection Validity	Interval for checking the validity of idle connections	-	INT	LAST
	driverName	Driver	Driver	-	STRING	LAST
	totalConnections	Total Connections	Total number of connections	-	INT	LAST
	activeConnections	Active Connections	Number of active connections	-	INT	LAST
	idleConnections	Idle Connections	Number of idle connections	-	INT	LAST
	threadsAwaitingConnection	Waiting Connections	Number of waiting connections	-	INT	LAST
Connection details (**connection**)	url	Connection Address	Connection address	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total Time	Total time	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Exception (**exception**: Hikari call exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Version (**version**)	version	Version	Version	-	STRING	LAST

7.3.10 Jetcd Monitoring

This section describes the types, names, and meanings of Jetcd metrics collected by APM.

Table 7-29 Jetcd collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Parse Value or Not	radio	JAVA	false	2.2.8	-	Whether to parse the value of the key-value pair. If it is not parsed, the value will be replaced with a question mark (?).

Table 7-30 Jetcd metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: Jetcd call exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Jetcd UnaryRpc call monitoring (**naryRpc**)	endpoints	Cluster Address	Address of the etcd cluster	-	ENUM	LAST
	request	Request Type	Request type of the etcd API	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Jetcd Watch callback monitoring (**watcher**)	listener	listener	Listener class name corresponding to WatchImpl	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Jetcd KeepAlive callback monitoring (**KeepAlive**)	observers	observers	StreamObserver class name corresponding to KeepAlive	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Jetcd Election Observe callback monitoring (**election Observe**)	listener	Listener	Listener bound to the observe call	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Jetcd summary (**total**)	errorCount	Errors	Total number of errors	-	INT	SUM
	invokeCount	Calls	Total number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
Jetcd version (**version**)	version	Version	Version	-	STRING	LAST

7.3.11 MongoDB Monitoring

This section describes the types, names, and meanings of MongoDB metrics collected by APM.

Table 7-31 Collection parameters for MongoDB monitoring

Parameter	Data Type	Application Type	Default Value	Supported Start Agent Version	Supported End Agent Version	Description
TraceReportTimeSpanThreshold(ms)	integer	JAVA	1	2.1.13	-	Threshold for reporting getConnection method traces. If the threshold is not exceeded, such traces will not be reported.
isParseOriginalCommand	radio	JAVA	false	2.2.2	-	Indicates whether to collect original Mongo JSON commands.

Table 7-32 MongoDB metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Connection details (**connection**)	host	Connected Host	Connected host	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total Time	Total time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorCount	Errors	Number of errors	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	openedCount	Opened Connections	Number of opened connections	-	INT	SUM
	closedCount	Closed Connections	Number of closed connections	-	INT	SUM
	idleClosedCount	Connections Closed Due to Idling	Number of connections that are closed due to long idle time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lifeClosedCount	Connections Closed Due to Keepalive Timeout	Number of connections that are closed due to keepalive timeout	-	INT	SUM
	errorClosedCount	Connections Closed Due to Errors	Number of connections that are closed due to errors	-	INT	SUM
	staleClosedCount	Connections Closed Due to Pool Clearing	Number of connections that are closed due to pool clearing	-	INT	SUM
	poolClosedClosedCount	Connections Closed Due to Pool Closure	Number of connections that are closed due to pool closure	-	INT	SUM
Exception (**exception**: exception statistics of MongoDB calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Cluster information (**clusterInfo**)	clusterId	Cluster ID	Cluster ID	-	ENUM	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	hosts	Cluster Node Information Set on Client	Cluster node information set on the client	-	STRING	LAST
MongoDB call monitoring (**client**)	namespace	Namespace	Namespace corresponding to the MongoDB operation	-	ENUM	LAST
	command	Command	Command run on the MongoDB server	-	ENUM	LAST
	concurrentMax	Max. concurrency	Maximum concurrency	-	INT	MAX
	queryCount	Read Rows	Number of read rows	-	INT	SUM
	updateCount	Updated Rows	Number of updated rows	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
MongoDB version (**version**)	version	Version	Version	-	STRING	LAST
MongoDB summary (**total**: summary of MongoDB call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	queryCount	Total Read Rows	Total number of read rows	-	INT	SUM
	updateCount	Total Updated Rows	Total number of updated rows	-	INT	SUM
	errorCount	Total Errors	Total number of errors	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time	-	INT	SUM
MongoDB cluster call (**cluster**)	nodes	Cluster Node	Cluster node information	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Connection pool monitoring (**connectionPool**)	host	Connection Address	Connection address	-	ENUM	LAST
	maxSize	Max. Pool Size	Maximum connection pool size	-	INT	AVG
	minSize	Min. Pool Size	Minimum connection pool size	-	INT	AVG
	availableCount	Idle Connections	Number of idle connections	-	INT	AVG
	inUseCount	Active Connections	Number of active connections	-	INT	AVG
	maxWaitTimeMs	Max. Waiting Time (ms)	Maximum waiting time of a connection (ms)	-	INT	AVG
	maxConnectionLifeTimeMs	Max. Keepalive Time	Maximum keepalive time of a connection	-	INT	AVG
	maxConnectionIdleTimeMs	Max. Idle Time	Maximum idle time of a connection	-	INT	AVG

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
MongoDB node call monitoring (**serverNode**)	serverAddr	Node Address	Node address	-	ENUM	LAST
	type	Node Type	Node type	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

7.3.12 MySQL Database

This section describes the types, names, and meanings of MySQL database metrics collected by APM.

Table 7-33 MySQL database collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Collect Original SQL Statement or Not	radio	JAVA	false	2.0.0	-	Whether to collect and report original SQL statements

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Table Name for Aggregation	array	JAVA	-	2.2.2	-	Table name specified for SQL statement aggregation. Tables starting with this name will be aggregated into the same table.

Table 7-34 MySQL database metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Database connection (**connection**: APM counts SQL call statistics by database.)	db	Database	Database name	-	ENUM	LAST
	createdCount	Created Connections	Number of connections created by the database	-	INT	SUM
	currentCount	Current Connections	Current number of connections of the database	-	INT	SUM
	destroyedCount	Destroyed Connections	Number of the database's connections that have been destroyed	-	INT	SUM
	errorCount	Errors	Number of errors that the database encounters	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	invokeCount	Calls	Number of times that the database is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the database	ms	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	readRowCount	Read Rows	Number of rows read from the database	-	INT	SUM
	updatedRowCount	Updated Rows	Number of rows updated in the database	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time of the database	ms	INT	SUM
	slowestSql	Slowest SQL	Slowest SQL statement of the database in the collection period	-	STRING	LAST
Exception (**exception**: exception statistics about SQL calls)	causeType	Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Message	Exception message	-	STRING	LAST
	sql	Exception SQL	SQL statement that encounters an exception	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Version (**version**: MySQL package version)	version	Version	Driver package version	-	STRING	LAST
SQL monitoring (**sql**: APM counts call statistics by SQL.)	sql	SQL ID	Unique ID of the SQL statement, which is used for alarm configuration	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the SQL statement	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorCount	Errors	Number of errors that the SQL statement encounters	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of times that the SQL statement is called	-	INT	SUM
	lastError	Error Message	SQL error information	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the SQL statement	ms	INT	MAX
	readRowCount	Read Rows	Number of read rows of the SQL statement	-	INT	SUM
	runningCount	Ongoing Executions	Number of SQL statements that are being executed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	sqlString	SQL Statement	SQL statement	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time	ms	INT	SUM
	updatedRowCount	Updated Rows	Number of updated rows of the SQL statement	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	lastTraceId	Latest Trace ID	ID of the latest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Summary (**total**: summary about SQL statement call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	errorCount	Errors	Total number of errors	-	INT	SUM
	readRowCount	Read Rows	Total number of read rows	-	INT	SUM
	totalTime	RT	Total response time	ms	INT	SUM
	updatedRowCount	Updated Rows	Total number of updated rows	-	INT	SUM

7.3.13 ObsClient Monitoring

This section describes the types, names, and meanings of ObsClient metrics collected by APM.

Table 7-35 ObsClient metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of ObsClient calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
URL monitoring (**obsClientInvocation**: APM counts URL call statistics by URL.)	client	client	client	-	ENUM	LAST
	url	url	Called URL	-	ENUM	LAST
	method	HTTP Method	HTTP method of the URL	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the URL	-	INT	MAX
	errorCount	Errors	Number of call errors of the URL	-	INT	SUM
	hostUri	hostUri	hostUri	-	STRING	LAST
	invokeCount	Calls	Number of times that the URL is called	-	INT	SUM
	lastError	Error Message	Error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the called URL	-	INT	MAX
	responseCloseCount	Closed Responses	Number of responses that are closed	-	INT	SUM
	totalTime	Total RT	Total response time of the called URL	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Status code statistics (**code**: APM counts URL call statistics by status code.)	code	Status Code	Status code	-	ENUM	LAST
	url	URL	URL that returns the status code	-	STRING	LAST
	count	Count	Number of times that the status code has occurred	-	INT	SUM
ObsClient summary (**total**)	errorCount	Total Request Errors	Total number of request errors	-	INT	SUM
	invokeCount	Calls	Total number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM

7.3.14 Oracle Database

This section describes the types, names, and meanings of Oracle database metrics collected by APM.

Table 7-36 Oracle database collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Collect Original SQL Statement or Not	radio	JAVA	false	2.2.9	-	Whether to collect and report original SQL statements

Table 7-37 Oracle database metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Database connection (**connection**: APM counts SQL call statistics by database.)	db	Database	Database name	-	ENUM	LAST
	createdCount	Created Connections	Number of connections created by the database	-	INT	SUM
	currentCount	Current Connections	Current number of connections of the database	-	INT	SUM
	destroyedCount	Destroyed Connections	Number of the database's connections that have been destroyed	-	INT	SUM
	errorCount	Errors	Number of errors that the database encounters	-	INT	SUM
	invokeCount	Calls	Number of times that the database is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the database	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	ranges	Custom RT Range	Custom response time range	-	STRING	LAST
	readRowCount	Read Rows	Number of rows read from the database	-	INT	SUM
	updatedRowCount	Updated Rows	Number of rows updated in the database	-	INT	SUM
	totalTime	Total RT	Total response time of the database	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	slowestSql	Slowest SQL	Slowest SQL statement of the database in the collection period	-	STRING	LAST
Exception (**exception**: APM counts SQL call statistics by database.)	causeType	Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Message	Exception message	-	STRING	LAST
	sql	Exception SQL	SQL statement that encounters an exception	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Version (**version**: Oracle package version)	version	Version	Driver package version	-	STRING	LAST
SQL monitoring (**sql**: APM counts call statistics by SQL.)	sql	SQL ID	Unique ID of the SQL statement, which is used for alarm configuration	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the SQL statement	-	INT	MAX
	errorCount	Errors	Number of errors that the SQL statement encounters	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of times that the SQL statement is called	-	INT	SUM
	lastError	Error Message	SQL error information	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the SQL statement	-	INT	MAX
	readRowCount	Read Rows	Number of read rows of the SQL statement	-	INT	SUM
	runningCount	Ongoing Executions	Number of SQL statements that are being executed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	sqlString	SQL Statement	SQL statement	-	STRING	LAST
	totalTime	Total RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Number of updated rows of the SQL statement	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	ranges	Custom RT Range	Custom response time range	-	STRING	LAST
Summary (**total**: summary about SQL statement call statistics)	nvokeCount	Calls	Total number of calls	-	INT	SUM
	errorCount	Errors	Total number of errors	-	INT	SUM
	readRowCount	Read Rows	Total number of read rows	-	INT	SUM
	totalTime	RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Total number of updated rows	-	INT	SUM

7.3.15 PostgreSQL Database

This section describes the types, names, and meanings of PostgreSQL database metrics collected by APM.

Table 7-38 PostgreSQL database collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Collect Original SQL Statement or Not	radio	JAVA	false	2.0.0	-	Whether to collect and report original SQL statements

Table 7-39 PostgreSQL database metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Database connection (**connection**: APM counts SQL call statistics by database.)	db	Database	Database name	-	ENUM	LAST
	created Count	Created Connections	Number of connections created by the database	-	INT	SUM
	current Count	Current Connections	Current number of connections of the database	-	INT	SUM
	destroyedCount	Destroyed Connections	Number of the database's connections that have been destroyed	-	INT	SUM
	errorCount	Errors	Number of errors that the database encounters	-	INT	SUM
	invokeCount	Calls	Number of times that the database is called	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time of the database	-	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	readRowCount	Read Rows	Number of rows read from the database	-	INT	SUM
	updatedRowCount	Updated Rows	Number of rows updated in the database	-	INT	SUM
	totalTime	Total RT	Total response time of the database	-	INT	SUM
	slowestSql	Slowest SQL	Slowest SQL statement of the database in the collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics about SQL calls)	causeType	Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Message	Exception message	-	STRING	LAST
	sql	Exception SQL	SQL statement that encounters an exception	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Version (**version**: PostgreSQL package version)	version	Version	Driver package version	-	STRING	LAST
SQL monitoring (**sql**: APM counts call statistics by SQL.)	sql	SQL ID	Unique ID of the SQL statement, which is used for alarm configuration	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the SQL statement	-	INT	MAX
	errorCount	Errors	Number of errors that the SQL statement encounters	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	invokeCount	Calls	Number of times that the SQL statement is called	-	INT	SUM
	lastError	Error Message	SQL error information	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the SQL statement	-	INT	MAX
	readRowCount	Read Rows	Number of read rows of the SQL statement	-	INT	SUM
	runningCount	Ongoing Executions	Number of SQL statements that are being executed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	sqlString	SQL Statement	SQL statement	-	STRING	LAST
	totalTime	Total RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Number of updated rows of the SQL statement	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Summary (**total**: summary about SQL statement call statistics)	invokeCount	Calls	Total number of calls	-	INT	SUM
	errorCount	Errors	Total number of errors	-	INT	SUM
	readRowCount	Read Rows	Total number of read rows	-	INT	SUM
	totalTime	RT	Total response time	-	INT	SUM
	updatedRowCount	Updated Rows	Total number of updated rows	-	INT	SUM

7.4 URLs

APM collects URL call statistics, covering CSEProvider cluster, Dubbo server, FunctionGraph, and URL monitoring. This section describes the types, names, and meanings of URL metrics collected by APM.

7.4.1 CSEProvider Cluster Monitoring

This section describes the types, names, and meanings of CSEProvider cluster metrics collected by APM.

Table 7-40 CSEProvider collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Blocklist Configuration	obj_array	JAVA	-	2.0.0	-	URLs in the blacklist will not be collected. There are four modes: "startwith", "endwith", "include", and "regex".
Max. Status Code Length	integer	JAVA	0	2.0.0	-	The system parses the body content within the specified length and obtains the corresponding service status code.
Key for Status Code Parsing	array	JAVA	-	2.0.0	-	Key based on which the corresponding body content is to be obtained and reported as the service status code
Normal Status Code	array	JAVA	-	2.0.0	-	If the obtained status code is not within the range, the request is regarded as an error trace.

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Slow Request Threshold	integer	JAVA	800	2.0.0	-	Slow request threshold. If the threshold is crossed, a URL will be regarded as a slow URL. The system will automatically increase the sampling ratio for it.
Slow URL Threshold	obj_array	JAVA	-	2.0.0	-	Slow request threshold. If this threshold is crossed, the URL is defined as a slow URL. In that case, the system automatically increases the sampling ratio for it. There are four sampling policies: 1. Full sampling; 2. Percentage sampling; 3. Fixed-quantity sampling per minute; 4. Automatic sampling.
Key for Header Value Interception	array	JAVA	-	2.0.0	-	Key based on which header value content is to be intercepted

Table 7-41 CSEProvider cluster metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
CSEProvider cluster monitoring (**cluster**: APM counts call statistics based on the ID of the caller's cluster.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM
	invokeCount	Calls	Number of cluster calls	-	INT	SUM
	maxTime	Max. RT	Maximum response time for calling the cluster	ms	INT	MAX
	totalTime	Total RT	Total response time for calling the cluster	ms	INT	SUM
CSEProvider call details (**detail**: APM counts call statistics by URL.)	qualifiedName	Call URL	Called URL of CSEProvider	-	ENUM	LAST
	method	HTTP Method	HTTP method of the called CSEProvider URL	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the CSEProvider URL	-	INT	MAX
	errorCount	Errors	Number of errors occur when the CSEProvider URL is called	-	INT	SUM
	invokeCount	Calls	Number of times that the CSEProvider URL is called	-	INT	SUM
	lastError	Error Message	Call error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for calling the CSEProvider URL	ms	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time for calling the CSEProvider URL	ms	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
CSEProvider summary (**total**: summary of all URL statistics)	errorCount	Errors	Total number of CSEProvider call errors	-	INT	SUM
	invokeCount	Calls	Total number of CSEProvider calls	-	INT	SUM
	totalTime	Total RT	Total response time of calling CSEProvider	ms	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Status code monitoring (**statuscode**: APM counts URL call statistics based on the status code returned.)	code	Status Code	HTTP status code	-	ENUM	LAST
	count	Count	Number of times that the status code has occurred	-	INT	SUM
	url	Sample URL	Sample URL which returns the status code	-	STRING	LAST

7.4.2 DubboProvider Monitoring

This section describes the types, names, and meanings of DubboProvider metrics collected by APM.

Table 7-42 DubboProvider collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
invocationDetail	radio	JAVA	false	2.0.0	-	Whether to collect call details such as parameters and return values (Default: not collect)
invocationLength	integer	JAVA	1000	2.0.0	-	Length of the call details to be collected (Default: 1000 bytes)
attachmentDetail	radio	JAVA	false	2.0.0	-	Whether to collect attachment (Default: not collect)

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
attachmentLength	integer	JAVA	1000	2.0.0	-	Length of the attachment to be collected (Default: 1000 bytes)
attachmentKeys	array	JAVA	-	2.0.0	-	Key to be collected from Dubbo attachment
fieldFilterKeys	array	JAVA	-	2.0.0	-	Sensitive information key to be filtered from Dubbo call parameters and returned information
slowRequestThreshold	integer	JAVA	800	2.0.0	-	Threshold for determining that a request is slow (unit: ms)

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
slowTraceCountStats	string	JAVA	100,50,10,2	2.0.0	-	Sampling configuration to be applied when a slow request is detected (Example: For "100,50,10,2", the first three values respectively indicate the sampling ratio (%) under low, medium, and high CPU loads, and the last value indicates the minimum number of samples to be collected for each method.)

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
errorTraceCountStats	string	JAVA	100,50,10,2	2.0.0	-	Default sampling ratio configuration when an error call is detected (Example: For "100,50,10,2", the first three values respectively indicate the sampling ratio (%) under low, medium, and high CPU loads, and the last value indicates the minimum number of samples to be collected for each method.)

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
traceCountStats	string	JAVA	20,10,5,1	2.0.0	-	Default sampling ratio configuration (Example: For "20,10,5,1", the first three values respectively indicate the sampling ratio (%) under low, medium, and high CPU loads, and the last value indicates the minimum number of samples to be collected for each method.)
excludeMethods	string	JAVA	[{"group":"mock"}, {"service":"mock*"}]	2.0.0	-	Method not to be traced

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
specMethods	string	JAVA	{{"group":"mock"}:{"percentage":10,"periodCount":1000,"sampleType":"4","slowRequestThreshold":800}}	2.0.0	-	Only call information about the methods that match the rule is collected.
DefaultSampleConfig	string	JAVA	{"percentage":10,"periodCount":1000,"sampleType":"4","slowRequestThreshold":800}	2.0.0	-	Default sampling configuration (If you customize Dubbo sampling, your configuration will overwrite the global configuration of APM.)

Table 7-43 Dubbo server metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Method call (**invocation**)	serviceUniqueName	serviceUniqueName	Unique service identifier (group +interface +version)	-	ENUM	LAST
	method	method	Method	-	ENUM	LAST
	source	Source	Call source	-	ENUM	LAST
	lastError	lastError	Error message	-	STRING	LAST
	slowTraceId	slowTraceId	Slowest trace ID	-	STRING	LAST
	errorTraceId	errorTraceId	Error trace ID	-	STRING	LAST
	range1	range1	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	range2	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	range3	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	range4	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	range5	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	range6	Number of requests with response time longer than 10s	-	INT	SUM
	invokeCount	invokeCount	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	errorCount	Number of errors	-	INT	SUM
	runningCount	runningCount	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	concurrentMax	Maximum concurrency	-	INT	MAX
Host summary (**cluster**)	cluster	cluster	Host	-	ENUM	LAST
	range1	range1	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	range2	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	range3	Number of requests with 100–500 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	range4	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	range5	Number of requests with 1–10s response time	-	INT	SUM
	range6	range6	Number of requests with response time longer than 10s	-	INT	SUM
	invokeCount	invokeCount	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	errorCount	Number of errors	-	INT	SUM
	runningCount	runningCount	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	concurrentMax	Maximum concurrency	-	INT	MAX
Return code summary (**resultCode**)	code	code	Return code	-	ENUM	LAST
	count	count	Number of calls	-	INT	SUM
	lastMethod	lastMethod	Last exception type	-	STRING	LAST
Summary (**total**)	lastError	lastError	Error message	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	slowTraceId	slowTraceId	Slowest trace ID	-	STRING	LAST
	errorTraceId	errorTraceId	Error trace ID	-	STRING	LAST
	range1	range1	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	range2	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	range3	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	range4	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	range5	Number of requests with 1–10s response time	-	INT	SUM
	range6	range6	Number of requests with response time longer than 10s	-	INT	SUM
	invokeCount	invokeCount	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	errorCount	Number of errors	-	INT	SUM
	runningCount	runningCount	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	concurrentMax	Maximum concurrency	-	INT	MAX
Thread pool (**threadPool**)	poolId	poolId	Unique ID of a thread pool	-	ENUM	LAST
	poolType	poolType	Custom Dubbo thread pool type, such as fixed, cached, or limited	-	STRING	LAST
	activeCount	activeCount	Number of active threads	-	INT	SUM
	corePoolSize	corePoolSize	Number of core threads	-	INT	SUM
	maximumPoolSize	maximumPoolSize	Maximum number of core threads	-	INT	SUM
	poolSize	poolSize	Size of the thread pool	-	INT	SUM
	queueSize	queueSize	Size of the waiting queue	-	INT	SUM
	taskCount	taskCount	Number of tasks	-	INT	SUM
Client version (**version**)	version	version	Client version	-	STRING	LAST

7.4.3 FunctionGraph Monitoring

This section describes the types, names, and meanings of FunctionGraph metrics collected by APM.

Table 7-44 Collection parameters for FunctionGraph monitoring

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Sampling Type	radio	JAVA	4	1.0.0	-	Sampling type. Options: full sampling, percentage sampling, fixed-quantity sampling per minute, and intelligent sampling (default).
Sampling Ratio	integer	JAVA	10	1.0.0	-	Percentage of samples to the total number of trace data records
Samples/Minute	integer	JAVA	1000	1.0.0	-	Number of trace data records collected every minute.
Slow Request Threshold	integer	JAVA	800	2.0.0	-	Slow request threshold. If the threshold is crossed, the method is regarded as a slow method. In that case, the trace sampling ratio will be increased by default.

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Method Configuration	obj_array	JAVA	-	2.0.0	-	Configure the slow request threshold and sampling ratio for each method separately. The following sampling policies can be set: percentage sampling, fixed-quantity sampling per minute, and automatic sampling.

Table 7-45 FunctionGraph metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Method monitoring (**detail**: APM counts URL call statistics by function method.)	method	Method	Request method	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the method	-	INT	MAX
	errorCount	Errors	Number of times that the method fails to be called	-	INT	SUM
	invokeCount	Calls	Number of times that the method is called	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time of the method in a collection period	ms	INT	MAX
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	totalTime	Total RT	Total response time of the method	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Cluster call (**cluster**: APM counts URL call statistics based on the cluster ID of the caller.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	totalTime	Total RT	Total response time for calling the cluster	ms	INT	SUM
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM

7.4.4 URL Monitoring

This section describes the types, names, and meanings of URL metrics collected by APM.

Table 7-46 Collection parameters for URL monitoring

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Key for Header Value Interception	array	JAVA	-	2.0.0	-	Key based on which header value content is to be intercepted
Key for Parameter Value Interception	array	JAVA	-	2.0.0	-	Key based on which parameter value content is to be intercepted

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Key for Cookie Value Interception	array	JAVA	-	2.0.0	-	Key based on which cookie value content is to be intercepted
URL Collection Configuration	obj_array	JAVA	-	2.0.0	-	URL collection configuration, based on which RESTful URLs are normalized. There are four modes: "startwith", "endwith", "include", and "regex".
Blocklist Configuration	obj_array	JAVA	-	2.0.0	-	URLs that match the specified rule will not be collected. There are four modes: "startwith", "endwith", "include", and "regex".
Service Code Length	integer	JAVA	0	2.0.0	-	Maximum length of the body content to be collected for service code parsing

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Key for Service Code Interception	array	JAVA	-	2.0.0	-	Specify a key. Then the system parses the key in the body (JSON) and obtains the service status code based on the key.
Normal Service Code	array	JAVA	-	2.0.0	-	Normal service code range. If a service code is not within this range, the corresponding trace is regarded as an error trace.
Slow Request Threshold	integer	JAVA	800	2.0.0	-	Slow request threshold. If the threshold is crossed, the URL is regarded as a slow URL. In that case, the trace sampling ratio will be increased by default.

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
URL Configuration	obj_array	JAVA	-	2.0.0	-	Configure the slow request threshold and sampling ratio for each URL separately. The following sampling policies can be set: percentage sampling, fixed-quantity sampling per minute, and automatic sampling.
Error Code	radio	JAVA	500	2.0.0	-	Status codes that are counted as errors
Auto URL Normalization	radio	JAVA	false	2.3.11	-	Whether the URL will be automatically normalized

Table 7-47 URL metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Summary (**total**, URL call statistics summary)	errorCount	Errors	Total number of errors	-	INT	SUM
	invokeCount	Calls	Total number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	satisfiedCount	Satisfied Requests	Number of satisfied requests	-	INT	SUM
	toleratingCount	Tolerable Requests	Number of tolerable requests	-	INT	SUM
Status code (**statuscode**: APM counts URL call statistics based on the status code returned.)	code	Status Code	Status code	-	ENUM	LAST
	count	Calls	Number of times that the status code has occurred	-	INT	SUM
	url	Sample URL	Sample URL which returns the status code in a collection period	-	STRING	LAST
URL monitoring (**url**: APM counts URL call statistics by URL.)	url	URL	Request URL	-	ENUM	LAST
	method	HTTP Method	Request HTTP method	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the URL	-	INT	MAX
	errorCount	Errors	URL call errors	-	INT	SUM
	invokeCount	Calls	Number of times that the URL is called	-	INT	SUM
	lastError	Error Message	Error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the URL in a collection period	ms	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTimeNativeUrl	Slowest URL	Slowest URL in the collection period	-	STRING	LAST
	runningCount	Ongoing Executions	Number of tasks that are being executed at the time of collection	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	isRoot	Root Span or Not	Whether the span is a root span	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	satisfiedCount	Satisfied Requests	Number of satisfied requests	-	INT	SUM
	toleratingCount	Tolerable Requests	Number of tolerable requests	-	INT	SUM
Cluster call (**user**: APM counts URL call statistics based on the cluster ID of the caller.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	total1xxCount	1xx Count	Number of times that a 1xx status code was returned	-	INT	SUM
	total2xxCount	2xx Count	Number of times that a 2xx status code was returned	-	INT	SUM
	total3xxCount	3xx Count	Number of times that a 3xx status code was returned	-	INT	SUM
	total4xxCount	4xx Count	Number of times that a 4xx status code was returned	-	INT	SUM
	total5xxCount	5xx Count	Number of times that a 5xx status code was returned	-	INT	SUM
	totalTime	Total RT	Total response time for calling the cluster	ms	INT	SUM
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	concurrentMax	Max. Concurrency	Maximum concurrency of the cluster	-	INT	MAX
	maxTime	Max. RT	Maximum response time of the URL in a collection period	ms	INT	MAX

7.5 External Calls

APM collects external call metrics, covering ApacheHttpAsyncClient connection pool, ApacheHttpClient connection pool, CSEConsumer cluster, Dubbo client, and HttpClient. This section describes the types, names, and meanings of external call metrics collected by APM.

7.5.1 ApacheHttpAsyncClient Connection Pool

This section describes the types, names, and meanings of ApacheHttpAsyncClient connection pool metrics collected by APM.

Table 7-48 ApacheHttpAsyncClient collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Threshold (ms) for Reporting Connection Trace	integer	JAVA	1	2.1.6	-	Threshold (ms) for reporting connection traces
Obtain Pool Info or Not	radio	JAVA	1	2.1.6	-	Whether to obtain pool information when getting connections

Table 7-49 ApacheHttpAsyncClient connection pool metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Connection pool (**connectionPool**: statistics about ApacheHttpAsyncClient connections in different states)	poolId	Connection Pool ID	ApacheHttpAsyncClient connection pool ID	-	ENUM	LAST
	available	Idle Connections	Number of idle connections in the connection pool	-	INT	SUM
	leased	Occupied Connections	Number of connections occupied	-	INT	SUM
	max	Max. Connections	Maximum number of connections in the connection pool	-	INT	MAX
	pending	Pending Connections	Number of pending connections in the connection pool	-	INT	SUM
Connection pool route (**collectionPoolRoute**: APM counts connection statistics by pool route.)	poolId	Connection Pool ID	ApacheHttpAsyncClient connection pool ID	-	ENUM	LAST
	route	Route	Routing information of the connection pool	-	ENUM	LAST
	available	Idle Connections	Number of idle connections in the connection pool	-	INT	SUM
	leased	Occupied Connections	Number of connections occupied	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	max	Max. Connections	Maximum number of connections in the connection pool	-	INT	MAX
	pending	Pending Connections	Number of pending connections in the connection pool	-	INT	SUM
Connection details (**connection**)	route	Route	Route	-	ENUM	LAST
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total Time	Total time	-	INT	SUM
	errorCount	Errors	Number of errors	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX

7.5.2 ApacheHttpClient Connection Pool

This section describes the types, names, and meanings of ApacheHttpClient connection pool metrics collected by APM.

Table 7-50 ApacheHttpClient connection pool metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Connection pool (**connectionPool**: statistics about ApacheHttpclient connections in different states)	poolId	Connection Pool ID	ApacheHttpclient connection pool ID	-	ENUM	LAST
	available	Idle Connections	Number of idle connections in the connection pool	-	INT	SUM
	leased	Occupied Connections	Number of connections occupied	-	INT	SUM
	max	Max. Connections	Maximum number of connections in the connection pool	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	pending	Pending Connections	Number of pending connections in the connection pool	-	INT	SUM
Connection pool route (**collectionPoolRoute**: APM counts connection statistics by pool route.)	poolId	Connection Pool ID	ApacheHttpClient connection pool ID	-	ENUM	LAST
	route	Route	Routing information of the connection pool	-	ENUM	LAST
	available	Idle Connections	Number of idle connections in the connection pool	-	INT	SUM
	leased	Occupied Connections	Number of connections occupied	-	INT	SUM
	max	Max. Connections	Maximum number of connections in the connection pool	-	INT	MAX
	pending	Pending Connections	Number of pending connections in the connection pool	-	INT	SUM

7.5.3 CSEConsumer Cluster Monitoring

This section describes the types, names, and meanings of CSEConsumer cluster metrics collected by APM.

Table 7-51 CSEConsumer cluster metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
CSEConsumer cluster monitoring (**cluster**: APM counts call statistics based on the ID of the cluster called by CSEConsumer.)	clusterId	Cluster ID	ID of the cluster where the called service is located	-	ENUM	LAST
	errorCount	Errors	Number of errors	-	INT	SUM
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time for calling the cluster	ms	INT	MAX
	totalTime	Total RT	Total response time for calling the cluster	ms	INT	SUM
CSEConsumer call details (**detail**: APM counts the call statistics based on the called URL.)	qualifiedName	Call URL	CSEConsumer call URL	-	ENUM	LAST
	method	HTTP Method	HTTP method for CSEConsumer calling	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum number of concurrent CSEConsumer calls	-	INT	MAX
	errorCount	Errors	Number of CSEConsumer call errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the error trace in a collection period	-	STRING	LAST
	slowTraceId	Slowest Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	invokeCount	Calls	Number of CSEConsumer calls	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Call error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for CSEConsumer calling	ms	INT	MAX
	totalTime	Total RT	Total response time for CSEConsumer calling	ms	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
CSEConsumer summary (**total**: summary of CSEConsumer call statistics)	errorCount	Errors	Total number of CSEConsumer call errors	-	INT	SUM
	invokeCount	Calls	Total number of CSEConsumer calls	-	INT	SUM
	totalTime	Total RT	Total response time for CSEConsumer calling	-	INT	SUM

7.5.4 DubboConsumer Monitoring

This section describes the types, names, and meanings of DubboConsumer metrics collected by APM.

Table 7-52 DubboConsumer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Method call (**invocation**)	serviceUniqueName	serviceUniqueName	Unique service identifier (group +interface +version)	-	ENUM	LAST
	method	method	Method	-	ENUM	LAST
	lastError	lastError	Error message	-	STRING	LAST
	slowTraceId	slowTraceId	Slowest trace ID	-	STRING	LAST
	errorTraceId	errorTraceId	Error trace ID	-	STRING	LAST
	range1	range1	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	range2	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	range3	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	range4	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	range5	Number of requests with 1–10s response time	-	INT	SUM
	range6	range6	Number of requests with response time longer than 10s	-	INT	SUM
	invokeCount	invokeCount	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	errorCount	Number of errors	-	INT	SUM
	runningCount	runningCount	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	concurrentMax	Maximum concurrency	-	INT	MAX
	source	Source	Call source	-	ENUM	LAST
Host summary (**cluster**)	cluster	cluster	Host	-	ENUM	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	range1	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	range2	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	range3	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	range4	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	range5	Number of requests with 1–10s response time	-	INT	SUM
	range6	range6	Number of requests with response time longer than 10s	-	INT	SUM
	invokeCount	invokeCount	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	errorCount	Number of errors	-	INT	SUM
	runningCount	runningCount	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	concurrentMax	Maximum concurrency	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Return code summary (**resultCode**)	code	code	Return code	-	ENUM	LAST
	count	count	Number of calls	-	INT	SUM
	lastMethod	lastMethod	Last exception type	-	STRING	LAST
Summary (**total**)	lastError	lastError	Error message	-	STRING	LAST
	slowTraceId	slowTraceId	Slowest trace ID	-	STRING	LAST
	errorTraceId	errorTraceId	Error trace ID	-	STRING	LAST
	range1	range1	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	range2	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	range3	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	range4	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	range5	Number of requests with 1–10s response time	-	INT	SUM
	range6	range6	Number of requests with response time longer than 10s	-	INT	SUM
	invokeCount	invokeCount	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	errorCount	Number of errors	-	INT	SUM
	runningCount	runningCount	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	concurrentMax	Maximum concurrency	-	INT	MAX
Thread pool (**threadPool**)	poolId	poolId	Unique ID of a thread pool	-	ENUM	LAST
	poolType	poolType	Custom Dubbo thread pool type, such as fixed, cached, or limited	-	STRING	LAST
	activeCount	activeCount	Number of active threads	-	INT	SUM
	corePoolSize	corePoolSize	Number of core threads	-	INT	SUM
	maximumPoolSize	maximumPoolSize	Maximum number of core threads	-	INT	SUM
	poolSize	poolSize	Size of the thread pool	-	INT	SUM
	queueSize	queueSize	Size of the waiting queue	-	INT	SUM
	taskCount	taskCount	Number of tasks	-	INT	SUM
Client version (**version**)	version	version	Version	-	STRING	LAST

7.5.5 HttpClient Monitoring

This section describes the types, names, and meanings of HttpClient metrics collected by APM.

Table 7-53 HttpClient collection parameters

Parameter	Data Type	Application Type	Default Value	Supported Start Agent Version	Supported End Agent Version	Description
URL Normalization Configuration	obj_array	JAVA	-	2.0.0	-	URL normalization configuration, based on which some RESTful URLs are normalized. There are four modes: "startwith", "endwith", "include", and "regex".

Table 7-54 HttpClient metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: HttpClient call exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	causeType	Exception Class	Exception class	-	ENUM	LAST
Cluster metrics (**hostInvocation**: APM counts HttpClient URL call statistics by the called party's cluster.)	envId	Cluster ID	Cluster ID of the called party	-	ENUM	LAST
	hostUri	Called Address	Called address	-	STRING	LAST
	errorCount	Errors	Number of errors that occur when the cluster URL is called	-	INT	SUM
	invokeCount	Calls	Number of times that the cluster URL is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time for calling the cluster URL	ms	INT	MAX
	totalTime	Total RT	Total response time for calling the cluster URL	ms	INT	SUM
	responseCloseCount	Closed Responses	Number of closed responses when the cluster URL is called	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
HttpClient version (**info**: HttpClient package version statistics)	httpClientVersion	HttpClient Version	Version of the HttpClient package	-	STRING	LAST
	httpCoreVersion	HttpCore Version	Version of the HttpCore package	-	STRING	LAST
URL monitoring (**invocation**: APM counts URL call statistics by URL.)	url	url	Called URL	-	ENUM	LAST
	method	HTTP Method	HTTP method of the URL	-	ENUM	LAST
	client	Client Type	HTTP client type	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the URL	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorCount	Errors	Number of call errors of the URL	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	hostUri	Called Address	Called URL address	-	STRING	LAST
	invokeCount	Calls	Number of times that the URL is called	-	INT	SUM
	lastError	Error Message	Error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time of the called URL	ms	INT	MAX
	responseCloseCount	responseCloseCount	Number of closed responses when the URL is called	-	INT	SUM
	totalTime	Total RT	Total response time of the called URL	ms	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	envId	Cluster ID	Cluster ID corresponding to the called URL	-	STRING	LAST
HttpClient summary (**total**: summary about HttpClient call statistics)	errorCount	Errors	Total number of errors	-	INT	SUM
	invokeCount	Calls	Total number of calls	-	INT	SUM
	responseCloseCount	Closed Responses	Total number of responses that are closed	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Status code statistics (**Code**: HttpClient call exception statistics)	code	Status Code	Status code	-	ENUM	LAST
	url	URL	URL that returns the status code	-	STRING	LAST
	count	Count	Number of times that the status code has occurred	-	INT	SUM

7.6 Cache

APM collects cache metrics, covering Redis method call, Jedis monitoring, and Lettuce client. This section describes the types, names, and meanings of cache metrics collected by APM.

7.6.1 Redis Method Call

This section describes the types, names, and meanings of Redis method call metrics collected by APM.

Table 7-55 Redis method call collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Parameter Parsing	radio	JAVA	false	2.0.0	-	Whether to parse Redis parameters and return values
Length	integer	JAVA	1000	2.0.0	-	Maximum length of parameters to be parsed
Port Differentiation	radio	JAVA	false	2.0.0	-	Whether to distinguish Redis ports

Table 7-56 Call metrics

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Call details (**detail**)	host	Host	Host	-	ENUM	LAST
	action	Method	Method	-	ENUM	LAST
	lastError	Error Message	Error message	-	STRING	LAST
	slowTraceId	Slowest Trace ID	Slowest trace ID	-	STRING	LAST
	errorTraceId	Error Trace ID	Error trace ID	-	STRING	LAST
	range1	0–5 ms	Number of requests with 0–5 ms response time	-	INT	SUM
	range2	5–10 ms	Number of requests with 5–10 ms response time	-	INT	SUM
	range3	10–50 ms	Number of requests with 10–50 ms response time	-	INT	SUM
	range4	50–100 ms	Number of requests with 50–100 ms response time	-	INT	SUM
	range5	100–1000 ms	Number of requests with 100–1000 ms response time	-	INT	SUM
	range6	> 1s	Number of requests with response time longer than 1s	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	hits	Hits	Hits of methods including GET, HGET, and EXPIRE	-	INT	SUM

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	runningCount	Ongoing Executions	Number of tasks that are being executed	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	blobCount	Calls with Large Field Returned	Number of calls with more than 1000 bytes returned	-	INT	SUM
	getInvokeCount	GET Calls	Number of times that GET methods including GET, HGET, and EXPIRE have been called	-	INT	SUM
	traffic	Traffic	Call traffic	-	INT	SUM
Host summary (**host**)	host	Host	Host	-	ENUM	LAST
	lastError	Error Message	Error message	-	STRING	LAST
	slowTraceId	Slowest Trace ID	Slowest trace ID	-	STRING	LAST
	errorTraceId	Error Trace ID	Error trace ID	-	STRING	LAST

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	0–5 ms	Number of requests with 0–5 ms response time	-	INT	SUM
	range2	5–10 ms	Number of requests with 5–10 ms response time	-	INT	SUM
	range3	10–50 ms	Number of requests with 10–50 ms response time	-	INT	SUM
	range4	50–100 ms	Number of requests with 50–100 ms response time	-	INT	SUM
	range5	100–1000 ms	Number of requests with 100–1000 ms response time	-	INT	SUM
	range6	> 1s	Number of requests with response time longer than 1s	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	hits	Hits	Hits of methods including GET, HGET, and EXPIRE	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	runningCount	Ongoing Executions	Number of tasks that are being executed	-	INT	SUM

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	blobCount	Calls with Large Field Returned	Number of calls with more than 1000 bytes returned	-	INT	SUM
	getInvokeCount	GET Calls	Number of times that GET methods including GET, HGET, and EXPIRE have been called	-	INT	SUM
	traffic	Traffic	Call traffic	-	INT	SUM
Method summary (**action**)	action	Method	Method	-	ENUM	LAST
	lastError	Last Exception Type	Last exception type	-	STRING	LAST
	slowTraceId	Slowest Trace ID	Slowest trace ID	-	STRING	LAST
	errorTraceId	Error Trace ID	Error trace ID	-	STRING	LAST
	range1	0–5 ms	Number of requests with 0–5 ms response time	-	INT	SUM
	range2	5–10 ms	Number of requests with 5–10 ms response time	-	INT	SUM
	range3	10–50 ms	Number of requests with 10–50 ms response time	-	INT	SUM
	range4	50–100 ms	Number of requests with 50–100 ms response time	-	INT	SUM
	range5	100–1000 ms	Number of requests with 100–1000 ms response time	-	INT	SUM

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 1s	Number of requests with response time longer than 1s	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	hits	Hits	Hits of methods including GET, HGET, and EXPIRE	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	runningCount	Ongoing Executions	Ongoing executions	-	INT	SUM
	blobCount	Calls with Large Field Returned	Number of calls with more than 1000 bytes returned	-	INT	SUM
	getInvokeCount	GET Calls	Number of times that GET methods including GET, HGET, and EXPIRE have been called	-	INT	SUM
	traffic	Traffic	Traffic	-	INT	SUM
Summary (**total**)	lastError	Last Exception Type	Last exception type	-	STRING	LAST
	slowTraceId	Slowest Trace ID	Slowest trace ID	-	STRING	LAST

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorTraceId	Error Trace ID	Error trace ID	-	STRING	LAST
	range1	0–5 ms	Number of requests with 0–5 ms response time	-	INT	SUM
	range2	5–10 ms	Number of requests with 5–10 ms response time	-	INT	SUM
	range3	10–50 ms	Number of requests with 10–50 ms response time	-	INT	SUM
	range4	50–100 ms	Number of requests with 50–100 ms response time	-	INT	SUM
	range5	100–1000 ms	Number of requests with 100–1000 ms response time	-	INT	SUM
	range6	> 1s	Number of requests with response time longer than 1s	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	hits	Hits	Hits of methods including GET, HGET, and EXPIRE	-	INT	SUM
	totalTime	Total RT	Total response time	ms	INT	SUM
	maxTime	Max. RT	Maximum response time	ms	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	runningCount	Ongoing Executions	Number of tasks that are being executed	-	INT	SUM

Name	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	blobCount	Calls with Large Field Returned	Number of calls with more than 1000 bytes returned	-	INT	SUM
	getInvokeCount	GET Calls	Number of times that GET methods including GET, HGET, and EXPIRE have been called	-	INT	SUM
	traffic	Traffic	Traffic	-	INT	SUM

7.6.2 Jedis Monitoring

This section describes the types, names, and meanings of Jedis metrics collected by APM.

Table 7-57 Jedis metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Connection pool (**jedisPool**)	pool	Pool	Unique identifier of a connection pool (host name+port number)	-	ENUM	LAST
	maxTotal	maxTotal	Maximum number of connections	-	INT	MAX
	maxIdle	maxIdle	Maximum number of idle connections	-	INT	MAX
	minIdle	minIdle	Minimum number of idle connections	-	INT	MIN

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	numActive	numActive	Number of active connections	-	INT	SUM
	numIdle	numIdle	Number of idle connections	-	INT	SUM
	numWaiters	numWaiters	Number of waiting connections	-	INT	SUM
	createdCount	createdCount	Number of connections that have been created	-	INT	SUM
	destroyedCount	destroyedCount	Number of connections that have been destroyed	-	INT	SUM
	borrowedCount	borrowedCount	Number of borrowed connections	-	INT	SUM
	maxWaitMillis	maxWaitMillis	Maximum waiting time (ms)	ms	INT	MAX
	maxBorrowWaitTimeMillis	maxBorrowWaitTimeMillis	Maximum waiting time of borrowed connections (ms)	ms	INT	MAX
	meanActiveTimeMillis	meanActiveTimeMillis	Average activation time of connections (ms)	ms	INT	SUM
	meanBorrowWaitTimeMillis	meanBorrowWaitTimeMillis	Average waiting time of borrowed connections	ms	INT	SUM
Active/standby switchover (**switch**)	from	from	Source host	-	STRING	LAST
	to	to	Target host	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	switchTimes	switchTimes	Number of switchovers	-	INT	SUM
Client information (**clientInfo**)	version	version	Client version	-	STRING	LAST
	mode	mode	Redis mode (standalone or cluster)	-	STRING	LAST
	nodes	nodes	Number of master Redis nodes	-	STRING	LAST

7.6.3 Lettuce Client

This section describes the types, names, and meanings of Lettuce client metrics collected by APM.

Table 7-58 Lettuce client metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Client information (**clientInfo**)	version	version	Client version	-	STRING	LAST
	mode	Mode	Redis mode (standalone or cluster)	-	STRING	LAST
	nodes	nodes	Number of master Redis nodes	-	STRING	LAST
Active/standby switchover (**switch**)	from	from	Source host	-	STRING	LAST
	to	to	Target host	-	STRING	LAST
	switchTimes	switchTimes	Number of switchovers	-	INT	SUM

7.7 Agent Monitoring

This section describes the types, names, and meanings of Agent monitoring metrics collected by APM.

Table 7-59 Agent monitoring metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Probe data (**detail**: probe data metric set)	type	Data Type	Type of data reported by the probe	-	ENUM	LAST
	discardBytes	Discarded Bytes	Number of discarded bytes	Byte	INT	SUM
	discardCount	Discard Times	Number of times that the type of data is discarded	-	INT	SUM
	errorBytes	Bytes Not Sent	Number of bytes that fail to be sent	Byte	INT	SUM
	errorCount	Send Failures	Number of times that the type of data fails to be sent	-	INT	SUM
	maxBytes	Max. Bytes	Maximum number of sent bytes	Byte	INT	MAX
	maxQueueSize	Max. Queue Size	Maximum length of the sending queue	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	sendBytes	Sent Bytes	Number of successfully sent bytes	Byte	INT	SUM
	sendCount	Successful Send Times	Number of times that the type of data is successfully sent	-	INT	SUM
	sendTotalTime	Total Send Time	Total sending time of the data type	ms	INT	SUM
	slowTime	Max. Send Time	Maximum sending time of the data type	ms	INT	MAX
Exception (**exception**: exception metric set)	causeType	Exception Class	Exception class	-	ENUM	LAST
	type	Type	Exception type	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Message	Exception message	-	STRING	LAST
	stackTrace	Stack	Exception stack	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Server connection monitoring (**transfer**: server connection monitoring metric set)	host	Host	Host information	-	ENUM	LAST
	connectIp	Connection IP Address	Connection IP address	-	STRING	LAST
	ipList	IP Addresses	All IP addresses	-	STRING	LAST
	isConnected	Connected or Not	Connected or not	-	INT	LAST
	rt	RT	Response time	-	INT	AVG
Queue monitoring (**repository**: queue monitoring metric set)	monitorQueueSize	Size of Monitoring Data Queue	Size of the monitoring data queue	-	INT	SUM
	monitorObjectSize	Memory Size of Monitoring Data	Memory size of the monitoring data	-	INT	SUM
	traceQueueSize	Size of Trace Data Queue	Size of the trace data queue	-	INT	SUM
	traceObjectSize	Memory Size of Trace Data	Memory size of the trace data	-	INT	SUM

7.8 Tomcat Monitoring

This section describes the types, names, and meanings of Tomcat metrics collected by APM.

Table 7-60 Tomcat metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Tomcat information (**tomcatInfo**: Tomcat package version statistics)	tomcatVersion	Tomcat Version	Tomcat version	-	STRING	LAST
Tomcat port monitoring (**tomcat**: APM counts statistics of Tomcat threads and connections by Tomcat port.)	name	Port Name	Port name	-	ENUM	LAST
	currentThreadCount	Current Threads	Number of current threads on the port	-	INT	AVG
	currentThreadsBusy	Busy Threads	Number of busy threads on the port at the time of collection	-	INT	AVG
	currentThreadsBusyMax	Max. Busy Threads	Maximum number of busy threads on the port in a collection period	-	INT	MAX
	maxThreads	Max. Threads	Maximum number of threads on the port	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxConnections	Max. Connections	Maximum number of connections on the port	-	INT	MAX
	connectionCount	Current Connections	Number of current connections of the port at the time of collection	-	INT	MAX
	connectionCountMax	Max. Connections	Maximum number of connections on the port in a collection period	-	INT	MAX

7.9 Message Queues

APM collects message queue metrics, covering KafkaConsumer, KafkaProducer, RabbitMqCommon, RabbitMqConsumer, RabbitMqProducer, RocketMqConsumer, and RocketMqProducer. This section describes the types, names, and meanings of message queue metrics collected by APM.

7.9.1 KafkaConsumer Monitoring

This section describes the types, names, and meanings of KafkaConsumer metrics collected by APM.

Table 7-61 KafkaConsumer monitoring collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Kafka Slow Request Threshold	integer	JAVA	800	2.1.14	-	The sampling ratio will increase if the slow request threshold is crossed.
Kafka Consumption Method Configuration	obj_array	JAVA	-	2.1.14	-	Kafka consumption method configuration

Table 7-62 KafkaConsumer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Topic (**topic**: Kafka topic monitoring data)	id	id	Client ID and IP address	-	ENUM	LAST
	topic	topic	Kafka topic name	-	ENUM	LAST
	bytesConsumedRate	Bytes Consumed/s	Number of bytes consumed per second	Byte	INT	AVG
	fetchSizeAvg	Avg. Bytes Fetched	Average number of bytes fetched for a request	Byte	INT	AVG
	fetchSizeMax	Max. Bytes Fetched	Maximum number of bytes fetched for a request	Byte	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	recordsConsumedRate	Messages Consumed/s	Number of messages consumed per second	-	INT	AVG
	recordsPerRequestAvg	Avg. Messages of Single Request	Average number of messages of a single request	-	INT	AVG
	seqIds	Producer-generated SN	Sequence number generated by the producer	-	STRING	LAST
	recordConsumedTotal	Total Consumption Times	Total number of consumption times	-	INT	SUM
	bytesConsumedTotal	Total Consumed Bytes	Total number of bytes that have been consumed	-	INT	SUM
Fetch monitoring (**fetch**: Kafka fetch monitoring data)	id	id	Client ID and IP address	-	ENUM	LAST
	bytesConsumedRate	Bytes Consumed/s	Number of bytes consumed per second	Byte	INT	AVG
	fetchLatencyAvg	Avg. Request Latency	Average request latency	ms	INT	AVG
	fetchLatencyMax	Max. Request Latency	Maximum request latency	ms	INT	MAX
	fetchRate	Requests/s	Number of requests per second	-	INT	AVG
	fetchSizeAvg	Avg. Bytes Fetched	Average number of bytes fetched for a request	Byte	INT	AVG

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	fetchSizeMax	Max. Bytes Fetched	Maximum number of bytes fetched for a request	Byte	INT	MAX
	recordsConsumedRate	Messages Consumed/s	Number of messages consumed per second	-	INT	AVG
	recordsLagMax	Max. Accumulated Messages	Maximum number of accumulated messages	-	INT	MAX
	recordsPerRequestAvg	Avg. Messages of Single Request	Average number of messages of a single request	-	INT	AVG
	seqIds	Producer-generated SN	Sequence number generated by the producer	-	STRING	LAST
	recordConsumedTotal	Total Consumption Times	Total number of consumption times	-	INT	SUM
	bytesConsumedTotal	Total Consumed Bytes	Total number of bytes that have been consumed	-	INT	SUM
Partition (**partition**: Kafka partition data)	id	id	Client ID and IP address	-	ENUM	LAST
	partition	partition	Kafka partition name	-	ENUM	LAST
	recordsLag	Accumulated Messages	Number of accumulated messages	-	INT	LAST
	recordsLagAvg	Avg. Accumulated Messages	Average number of accumulated messages	-	INT	AVG

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	recordsLagMax	Max. Accumulated Messages	Maximum number of accumulated messages	-	INT	MAX
	seqIds	Producer-generated SN	Sequence number generated by the producer	-	STRING	LAST
Kafka consumption method monitoring (**consumer**)	method	Method	Consumption method	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error details	-	STRING	LAST
	maxTime	Max. RT	Maximum response time in a collection period	-	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with more than 10s response time	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
KafkaConsumer summary (**total**)	recordConsumedTotal	Total Consumption Times	Total number of consumption times	-	INT	SUM
	bytesConsumedTotal	Total Consumed Bytes	Total number of bytes that have been consumed	-	INT	SUM
	recordsLag	Total Accumulated Messages	Total number of messages that have been accumulated	-	INT	LAST
Exception (**exception**: exception statistics about Kafka consumption)	causeType	Exception Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Exception Message	Exception message	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack	-	CLOB	LAST

7.9.2 KafkaProducer Monitoring

This section describes the types, names, and meanings of KafkaProducer metrics collected by APM.

Table 7-63 KafkaProducer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Topic (**topic**: Kafka topic monitoring data)	id	id	Client ID and IP address	-	ENUM	LAST
	topic	topic	Kafka topic name	-	ENUM	LAST
	byteRate	Bytes Sent/s	Number of bytes sent per second	Byte	INT	AVG
	recordErrorRate	Errors/s	Number of errors per second	-	INT	AVG
	recordRetryRate	Retries/s	Number of retries per second	-	INT	AVG
	recordSendRate	Messages sent/s	Number of messages sent per second	-	INT	AVG
	seqIds	Producer-generated SN	Sequence number generated by the producer	-	STRING	LAST
	recordSendTotal	Total Send Times	Total number of send times	-	INT	SUM
	byteTotal	Total Sent Bytes	Total number of bytes that have been sent	-	INT	SUM
KafkaProducer summary (**total**)	recordSendTotal	Total Send Times	Total number of send times	-	INT	SUM
	byteTotal	Total Sent Bytes	Total number of bytes that have been sent	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics about Kafka byte sending)	causeType	Exception Class	Exception class	-	ENUM	LAST
	exceptionType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of exceptions	-	INT	SUM
	message	Exception Message	Exception message	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack	-	CLOB	LAST
Send methods (**doSend Method**)	topic	topic	topic	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with more than 10s response time	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM

7.9.3 RabbitMqCommon Monitoring

This section describes the types, names, and meanings of RabbitMqCommon metrics collected by APM.

Table 7-64 RabbitMqCommon metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of RabbitMqCommon calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Connection monitoring (**connectionCount**: APM counts connection statistics.)	connection	connection	Connection information	-	ENUM	LAST
	connectionCount	Current Connections	Current number of connections	-	INT	LAST
	channelCount	Current Channels	Current number of channels	-	INT	LAST
	connectionCreated	Created Connections	Number of connections that have been created	-	INT	SUM
	connectionClosed	Destroyed Connections	Number of connections that have been destroyed	-	INT	SUM
	channelCreated	Created Channels	Number of channels that have been created	-	INT	SUM
	channelClosed	Destroyed Channels	Number of channels that have been destroyed	-	INT	SUM
Total monitoring (**total**: APM counts connection statistics by connection.)	connection	connection	Connection information	-	ENUM	LAST
	connectionCount	Current Connections	Current number of connections	-	INT	LAST
	channelCount	Current Channels	Current number of channels	-	INT	LAST
	connectionCreated	Created Connections	Number of connections that have been created	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	connectionClosed	Destroyed Connections	Number of connections that have been destroyed	-	INT	SUM
	channelCreated	Created Channels	Number of channels that have been created	-	INT	SUM
	channelClosed	Destroyed Channels	Number of channels that have been destroyed	-	INT	SUM
RabbitMQ version (**version**)	version	Version	Version	-	STRING	LAST

7.9.4 RabbitMqConsumer Monitoring

This section describes the types, names, and meanings of RabbitMqConsumer metrics collected by APM.

Table 7-65 Call metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of RabbitMqConsumer calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Push-mode consumption monitoring (**pushConsume**: APM counts statistics about push-mode message consumption.)	pushConsumeIdentifier	Identifier	Push-mode consumption identifier	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	consumedMsgCount	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	maxSingleMsgBytes	Max. Bytes Consumed	Maximum number of bytes consumed each time	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	manualAckCount	ACK Messages	Number of ACK messages	-	INT	SUM
	rejectCount	Rejected Messages	Number of rejected messages	-	INT	SUM
	requeueCount	Re-queued Messages	Number of re-queued messages	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being consumed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for consuming messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	unackedMsgCount	Unacked Messages in Channel	Number of unacknowledged messages in the channel	-	INT	LAST
Connection monitoring (**connectionConsume**: APM counts message consumption statistics by connection.)	connection	connection	Consumer connection information	-	ENUM	LAST
	connectionCount	Current Connections	Current number of connections	-	INT	LAST
	channelCount	Current Channels	Current number of channels	-	INT	LAST
	connectionCreated	Created Connections	Number of connections that have been created	-	INT	SUM
	connectionClosed	Destroyed Connections	Number of connections that have been destroyed	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	channelCreated	Created Channels	Number of channels that have been created	-	INT	SUM
	channelClosed	Destroyed Channels	Number of channels that have been destroyed	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	consumedMsgCount	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	maxSingleMsgBytes	Max. Bytes Consumed	Maximum number of bytes consumed each time	-	INT	MAX
	manualAckCount	ACK Messages	Number of ACK messages	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	rejectCount	Rejected Messages	Number of rejected messages	-	INT	SUM
	requeueCount	Re-queued Messages	Number of re-queued messages	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being consumed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for consuming messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	unackedMsgCount	Unacked Messages	Number of messages that have not been acknowledged in a connection	-	INT	LAST
Total monitoring (**total**: APM counts message consumption statistics by client.)	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	consumedMsgCount	consumed MsgCount	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	maxSingleMsgBytes	Max. Bytes Consumed	Maximum number of bytes consumed each time	-	INT	MAX
	manualAckCount	ACK messages	Number of ACK messages	-	INT	SUM
	rejectCount	Rejected Messages	Number of rejected messages	-	INT	SUM
	requeueCount	Re-queued Messages	Number of re-queued messages	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being consumed at the time of collection	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for consuming messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	unackedMsgCount	Unacked Messages	Number of unacknowledged messages on the client	-	INT	LAST

7.9.5 RabbitMqProducer Monitoring

This section describes the types, names, and meanings of RabbitMqProducer metrics collected by APM.

Table 7-66 RabbitMqProducer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of RabbitMq Producer calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Exchange monitoring (**exchangePublish**: APM counts message push statistics by exchange.)	connection	connection	Producer connection information	-	ENUM	LAST
	exchange	exchange	Exchange name	-	ENUM	LAST
	concurrentMax	Maximum concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM
	maxSingleMsgBytes	Max. Bytes Pushed	Maximum number of bytes in each push	-	INT	MAX
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Connection monitoring (**connectionPublish**: APM counts message push statistics by connection.)	connection	connection	Producer connection information	-	ENUM	LAST
	connectionCount	Current Connections	Current number of connections	-	INT	LAST
	channelCount	Current Channels	Current number of channels	-	INT	LAST
	connectionCreated	Created Connections	Number of connections that have been created	-	INT	SUM
	connectionClosed	Destroyed Connections	Number of connections that have been destroyed	-	INT	SUM
	channelCreated	Created Channels	Number of channels that have been created	-	INT	SUM
	channelClosed	Destroyed Channels	Number of channels that have been destroyed	-	INT	SUM
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM
	maxSingleMsgBytes	Max. Bytes Pushed	Maximum number of bytes in each push	-	INT	MAX
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Total monitoring (**total**: APM counts message push statistics by client.)	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM
	maxSingleMsgBytes	Max. Bytes Pushed	Maximum number of bytes in each push	-	INT	MAX
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

7.9.6 RocketMqConsumer Monitoring

This section describes the types, names, and meanings of RocketMqConsumer metrics collected by APM.

Table 7-67 RocketMqConsumer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of RocketMqConsumer calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Consumption pool monitoring (**consumeServicePool**)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	consumerGroup	Consumer group	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	currentConsumeRequestQueueSize	Current Size of Consumption Request Queue	Current size of the consumption request queue	-	INT	AVG
	maxConsumeRequestQueueSize	Max. Size of Consumption Request Queue	Maximum size of the consumption request queue	-	INT	MAX
	currentConsumingThreadCount	Current Consumption Threads	Current number of consumption threads	-	INT	AVG
	maxConsumingPoolSize	Max. Consumption Threads	Maximum number of consumption threads	-	INT	MAX
MessageListener monitoring (**consumeListener**: APM counts message consumption statistics by MessageListener.)	consumeListener	MessageListener	Registered message listener, which is the callback function for message consumption	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	Messages Consumed	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	reconsumeTimes	Message Re-consumption Times	Number of message re-consumption times	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	runningCount	Ongoing Executions	Number of messages that are being consumed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for consuming messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Client ID monitoring (**clientIdConsume**: APM counts message consumption statistics by client ID.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Consumer Group	Consumer group	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	Messages Consumed	Number of messages that have been consumed	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	reconsumeTimes	Message re-consumption times	Number of message re-consumption times	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being consumed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for consuming messages	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Topic monitoring (**topicConsume**: APM counts message consumption statistics by topic.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Consumer Group	Consumer group	-	ENUM	LAST
	pid	pid	pid	-	STRING	LAST
	topic	Topic	Topic for message consumption	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	Messages Consumed	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	reconsumeTimes	Message Re-consumption Times	Number of message re-consumption times	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being consumed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for consuming messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Queue monitoring (**queueConsume**: APM counts message consumption statistics by queue.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Consumer Group	Consumer group	-	ENUM	LAST
	queue	Message Queue	Message queue ID	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent consumption	-	INT	MAX
	errorCount	Errors	Number of message consumption errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	Messages Consumed	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	reconsumeTimes	Message Re-consumption Times	Number of message re-consumption times	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message consumption	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time for consuming messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pulled at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pulling messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Client ID monitoring (**clientIdPull**: APM counts message pull statistics by client ID.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Consumer Group	Consumer group	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent pulling	-	INT	MAX
	errorCount	Errors	Number of message pull errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of pull calls	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	pulledMsgCount	Messages Pulled	Number of messages that have been pulled	-	INT	SUM
	pulledBytes	Bytes Pulled	Number of bytes that have been pulled	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message pulling	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pulling messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pulled at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pulling messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Topic monitoring (**topicPull**: APM counts message pull statistics by topic.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Consumer Group	Consumer group	-	ENUM	LAST
	topic	Topic	Topic for pulling messages	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent pulling	-	INT	MAX
	errorCount	Errors	Number of message pull errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of pull calls	-	INT	SUM
	pulledMsgCount	Messages Pulled	Number of messages that have been pulled	-	INT	SUM
	pulledBytes	Bytes Pulled	Number of bytes that have been pulled	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Information about the error that has occurred during message pulling	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pulling messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pulled at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pulling messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Queue monitoring (**queuePull**: APM counts message pull statistics by queue.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Consumer Group	Consumer group	-	ENUM	LAST
	queue	Message Queue	Message queue ID	-	ENUM	LAST
	pid	pid	pid	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent pulling	-	INT	MAX
	errorCount	Errors	Number of message pull errors	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of pull calls	-	INT	SUM
	pulledMsgCount	Messages Pulled	Number of messages that have been pulled	-	INT	SUM
	pulledBytes	Bytes Pulled	Number of bytes that have been pulled	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message pulling	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pulling messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pulled at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	totalTime	Total RT	Total response time for pulling messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Total monitoring (**total**: APM counts message consumption statistics by client.)	consumeErrorCount	Consumption Errors	Number of message consumption errors	-	INT	SUM
	consumeInvokeCount	consumeInvokeCount	Number of consumption call times	-	INT	SUM
	consumedMsgCount	consumedMsgCount	Number of messages that have been consumed	-	INT	SUM
	consumedBytes	Bytes Consumed	Number of bytes that have been consumed	-	INT	SUM
	consumeTotalTime	Total RT for Message Consumption	Total response time for consuming messages	-	INT	SUM
	reconsumeTimes	Message Re-consumption Times	Number of message re-consumption times	-	INT	SUM
	pullErrorCount	Pull Errors	Number of message pull errors	-	INT	SUM
	pullInvokeCount	pullInvokeCount	Number of pull calls	-	INT	SUM
	pulledMsgCount	pulledMsgCount	Number of messages that have been pulled	-	INT	SUM
	pulledBytes	Bytes Pulled	Number of bytes that have been pulled	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	pullTotalTime	Total Pull RT	Total response time for pulling messages	-	INT	SUM

7.9.7 RocketMqProducer Monitoring

This section describes the types, names, and meanings of RocketMqProducer metrics collected by APM.

Table 7-68 RocketMqProducer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: exception statistics of RabbitMq Producer calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
clientId monitoring (**clientIdPublish**: APM counts message push statistics by clientId.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Producer Group	Producer group	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Topic monitoring (**topicPublish**: APM counts message push statistics by topic.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Producer Group	Producer group	-	ENUM	LAST
	topic	Topic	Topic to which a message is pushed	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Queue monitoring (**queuePublish**: APM counts message push statistics by queue.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Producer Group	Producer group	-	ENUM	LAST
	queue	Message Queue	Message queue ID	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Broker monitoring (**brokerPublish**: APM counts message push statistics by broker.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Producer Group	Producer group	-	ENUM	LAST
	broker	broker	Broker address	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of message push errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Information about the error that has occurred during message pushing	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Transaction monitoring (**transactionPublish**: APM counts transaction message push statistics by client.)	clientId	clientId	Client instance ID	-	ENUM	LAST
	group	Producer Group	Producer group	-	ENUM	LAST
	pid	pid	PID	-	STRING	LAST
	concurrentMax	Max. Concurrency	Maximum number of transaction messages for concurrent push	-	INT	MAX
	errorCount	Errors	Number of transaction message push errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	lastError	Error Message	Error information generated when an error has occurred during transaction message push	-	STRING	LAST
	maxTime	Max. RT	Maximum response time for pushing transaction messages	-	INT	MAX
	runningCount	Ongoing Executions	Number of transaction messages that are being pushed at the time of collection	-	INT	SUM
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	totalTime	Total RT	Total response time for pushing transaction messages	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–200 ms	Number of requests with 100–200 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	200–1000 ms	Number of requests with 200–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
Total monitoring (**total**: APM counts message push statistics by client.)	errorCount	Errors	Number of message push errors	-	INT	SUM
	invokeCount	invokeCount	Number of message push calls	-	INT	SUM
	publishedMsgCount	publishedMsgCount	Number of push messages	-	INT	SUM
	publishedBytes	Push Bytes	Number of push bytes	-	INT	SUM
	totalTime	Total RT	Total response time for pushing messages	-	INT	SUM

7.10 RPC

APM collects remote procedure calls (RPCs) metrics, covering gRPCClient and gRPCServer monitoring. This section describes the types, names, and meanings of RPC metrics collected by APM.

7.10.1 GRPCClient Monitoring

This section describes the types, names, and meanings of GRPCClient metrics collected by APM.

Table 7-69 GRPCClient monitoring metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Method monitoring (**detail**: APM counts URL call statistics by method.)	method	Method	Request method	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the method	-	INT	MAX
	errorCount	Errors	Number of times that the method fails to be called	-	INT	SUM
	invokeCount	Calls	Number of times that the method is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the method in a collection period	-	INT	MAX
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	totalTime	Total RT	Total response time of the method	-	INT	SUM
Cluster call (**cluster**: APM counts URL call statistics based on the cluster ID of the caller.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	totalTime	Total RT	Total response time for calling the cluster	-	INT	SUM
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM

7.10.2 GRPCServer Monitoring

This section describes the types, names, and meanings of GRPCServer metrics collected by APM.

Table 7-70 GRPCServer monitoring collection parameters

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Sampling Type	radio	JAVA	4	1.0.0	-	Sampling type. Options: full sampling, percentage sampling, fixed-quantity sampling per minute, and intelligent sampling (default).
Sampling Ratio	integer	JAVA	10	1.0.0	-	Percentage of samples to the total number of trace data records
Samples/ Minute	integer	JAVA	1000	1.0.0	-	Number of trace data records collected every minute.
Slow Request Threshold	integer	JAVA	800	2.0.0	-	Slow request threshold. If the threshold is crossed, the method is regarded as a slow method. In that case, the trace sampling ratio will be increased by default.

Parameter	Data Type	Application Type	Default	Supported Start Agent Version	Supported End Agent Version	Description
Method Configuration	obj_array	JAVA	-	2.0.0	-	Configure the slow request threshold and sampling ratio for each method separately. The following sampling policies can be set: percentage sampling, fixed-quantity sampling per minute, and automatic sampling.

Table 7-71 GRPCServer monitoring metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Method monitoring (**detail**: APM counts URL call statistics by method.)	method	Method	Request method	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the method	-	INT	MAX
	errorCount	Errors	Number of times that the method fails to be called	-	INT	SUM
	invokeCount	Calls	Number of times that the method is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the method in a collection period	-	INT	MAX

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	totalTime	Total RT	Total response time of the method	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Cluster call (**cluster**: APM counts URL call statistics based on the cluster ID of the caller.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	totalTime	Total RT	Total response time for calling the cluster	-	INT	SUM
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM

7.11 IoT

APM collects IoT metrics, including CoapClient, CoapServer, MoquetteBroker, PahoPublisher, PahoSubscriber, and Paho. This section describes the types, names, and meanings of IoT metrics collected by APM.

7.11.1 CoapClient Monitoring

This section describes the types, names, and meanings of CoapClient metrics collected by APM.

Table 7-72 Call metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
URL monitoring (**detail**: APM counts URL call statistics by URL, packet type, and request type.)	url	URL	Request URL	-	ENUM	LAST
	requestType	Packet Type	Packet type	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the method	-	INT	MAX
	errorCount	Errors	Number of times that the method fails to be called	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	invokeCount	Calls	Number of times that the method is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the method in a collection period	-	INT	MAX
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	totalTime	Total RT	Total response time of the method	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	method	Request Type	Request type	-	ENUM	LAST
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	lastError	Error Message	Error message	-	STRING	LAST
Status code (**statusInfo**: APM counts URL call statistics based on the status code returned.)	statusInfo	Status Code	Status code	-	ENUM	LAST
	count	Calls	Number of times that the status code has occurred	-	INT	SUM
	url	Sample URL	Sample URL which returns the status code in a collection period	-	STRING	LAST
Cluster call (CON packets) (**cluster_con**: APM counts URL call statistics (CON packets) based on the cluster ID.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	totalTime	Total RT	Total response time for calling the cluster	-	INT	SUM
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM
CoapClient version (**version**)	version	Version	Version	-	STRING	LAST

7.11.2 CoapServer Monitoring

This section describes the types, names, and meanings of CoapServer metrics collected by APM.

Table 7-73 CoapServer metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
URL monitoring (**detail**: APM counts URL call statistics by URL, packet type, and request type.)	url	URL	Request URL	-	ENUM	LAST
	requestType	Packet Type	Packet type	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency of the method	-	INT	MAX
	errorCount	Errors	Number of times that the method fails to be called	-	INT	SUM
	invokeCount	Calls	Number of times that the method is called	-	INT	SUM
	maxTime	Max. RT	Maximum response time of the method in a collection period	-	INT	MAX
	runningCount	Ongoing Executions	Number of executions of the method at the time of collection	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM
	totalTime	Total RT	Total response time of the method	-	INT	SUM
	method	Request Type	Request type	-	ENUM	LAST
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST
	lastError	Error Message	Error message	-	STRING	LAST
Status code (**statusInfo**: APM counts URL call statistics based on the status code returned.)	statusInfo	Status Code	Status code	-	ENUM	LAST
	count	Calls	Number of times that the status code has occurred	-	INT	SUM
	url	url	URL corresponding to the status code	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Cluster call (**cluster**: APM counts URL call statistics based on the cluster ID of the caller.)	clusterId	Cluster ID	Cluster ID of the caller	-	ENUM	LAST
	invokeCount	Calls	Number of times the cluster is called	-	INT	SUM
	totalTime	Total RT	Total response time for calling the cluster	-	INT	SUM
	errorCount	Errors	Number of times that the cluster fails to be called	-	INT	SUM
	clientErrorCount	Client Errors	Number of client errors	-	INT	SUM
	serverErrorCount	Server Errors	Number of server errors	-	INT	SUM
CoapServer version (**version**)	version	Version	Version	-	STRING	LAST

7.11.3 MoquetteBroker Monitoring

This section describes the types, names, and meanings of MoquetteBroker metrics collected by APM.

Table 7-74 MoquetteBroker metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: Moquette Broker call exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
Moquette Broker version (**version**)	version	Version	Version	-	STRING	LAST
Moquette Broker topic summary (**total**: Moquette Broker topic summary)	msgSentCount	Message Sending Times	Total number of message sending times	-	INT	SUM
	bytesSent	Bytes Sent	Total number of bytes sent	-	INT	SUM
	msgReceivedCount	Message Receiving Times	Total number of message receiving times	-	INT	SUM
	bytesReceived	Bytes Received	Total number of bytes received	-	INT	SUM
Moquette Broker topic-based monitoring (**brokerTopic**)	topic	Topic	Topic	-	ENUM	LAST
	subscribeCount	Subscriptions	Number of subscriptions	-	INT	SUM
	msgSentCount	Message Sending Times	Number of message sending times	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	bytesSent	Bytes Sent	Number of bytes sent	-	INT	SUM
	msgReceivedCount	Message Receiving Times	Number of message receiving times	-	INT	SUM
	bytesReceived	Bytes Received	Number of bytes received	-	INT	SUM

7.11.4 PahoPublisher Monitoring

This section describes the types, names, and meanings of PahoPublisher metrics collected by APM.

Table 7-75 PahoPublisher metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Monitoring of PUBLISH packets sent by PahoPublisher (**message**)	uri	serviceUri	URI of the MQTT server connected to PahoPublisher	-	ENUM	LAST
	msgType	Packet Type	Type of the packet that is sent	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Node-based monitoring of PUBLISH packets sent by PahoPublisher (**uriMessage**)	uri	serviceUri	URI of the MQTT server connected to PahoPublisher	-	ENUM	LAST
	errorCount	Errors	Number of errors	-	INT	SUM
	invokeCount	Calls	Number of calls	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
Exception (**exception**: exception statistics of PahoPublisher calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
PahoPublisher monitoring by topic (**clientPublish**)	clientId	clientId	clientId	-	ENUM	LAST
	topic	Topic	Topic	-	ENUM	LAST
	msgSentCount	Message Sending Times	Number of message sending times	-	INT	SUM
	bytesSent	Bytes Sent	Number of bytes sent	-	INT	SUM
PahoPublisher version (**version**)	version	Version	Version	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
PahoPublisher topic summary (**total**)	msgSentCount	Message Sending Times	Total number of message sending times	-	INT	SUM
	bytesSent	Bytes Sent	Total number of bytes sent	-	INT	SUM

7.11.5 PahoSubscriber Monitoring

This section describes the types, names, and meanings of PahoSubscriber metrics collected by APM.

Table 7-76 PahoSubscriber metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Monitoring of PUBLISH packets received by PahoSubscriber (**message**)	uri	service Uri	URI of the MQTT server connected to PahoSubscriber	-	ENUM	LAST
	msgType	Packet Type	Type of the packet that is sent	-	ENUM	LAST
	concurrentMax	Max. Concurrency	Maximum concurrency	-	INT	MAX
	errorCount	Errors	Number of errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	invokeCount	Calls	Number of calls	-	INT	SUM
	lastError	Error Message	Error message	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Node-based monitoring of PUBLISH packets received by PahoSubscriber (**uriMessage**)	uri	serviceUri	URI of the MQTT server connected to PahoSubscriber	-	ENUM	LAST
	errorCount	Errors	Errors	-	INT	SUM
	invokeCount	Number of calls	Calls	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM
Exception (**exception**: exception statistics of PahoSubscriber calls)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
PahoSubscriber topic-based monitoring (**clientReceive**)	clientId	clientId	clientId	-	ENUM	LAST
	topic	Topic	Topic	-	ENUM	LAST
	msgReceivedCount	Message Receiving Times	Number of message receiving times	-	INT	SUM
	bytesReceived	Bytes Received	Number of bytes received	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
PahoSubscriber version (**version**)	version	Version	Version	-	STRING	LAST
PahoSubscriber topic summary (**total**)	msgReceivedCount	Message Receiving Times	Total number of message receiving times	-	INT	SUM
	bytesReceived	Bytes Received	Total number of bytes received	-	INT	SUM

7.12 Communication Protocol

This section describes the types, names, and meanings of WebSocket metrics collected by APM.

Table 7-77 WebSocket metrics

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
Exception (**exception**: WebSocket exception statistics)	exceptionType	Exception Type	Exception type	-	ENUM	LAST
	causeType	Exception Class	Exception class	-	ENUM	LAST
	count	Count	Number of times the exception has occurred	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	message	Exception Message	Message returned when the exception has occurred	-	STRING	LAST
	stackTrace	Exception Stack	Exception stack information	-	CLOB	LAST
WebSocket message monitoring (**message**: WebSocket message processing information)	url	url	URL corresponding to WebSocket	-	ENUM	LAST
	errorCount	Errors	Number of message processing errors	-	INT	SUM
	errorTraceId	Error Trace ID	ID of the trace that encounters an error in a collection period	-	STRING	LAST
	slowTraceId	Slow Trace ID	ID of the slowest trace in a collection period	-	STRING	LAST

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	invokeCount	Calls	Number of times that the message processing method is called	-	INT	SUM
	traffic	Traffic	Traffic	-	INT	SUM
	createSessionCount	Created Connections	Number of connections that have been created	-	INT	SUM
	closeSessionCount	Closed Connections	Number of closed connections	-	INT	SUM
	closeReason	Close Reason	Cause of the connection closure	-	STRING	LAST
	maxTime	Max. RT	Maximum response time	-	INT	MAX
	totalTime	Total RT	Total response time	-	INT	SUM
	range1	0–10 ms	Number of requests with 0–10 ms response time	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
	range2	10–100 ms	Number of requests with 10–100 ms response time	-	INT	SUM
	range3	100–500 ms	Number of requests with 100–500 ms response time	-	INT	SUM
	range4	500–1000 ms	Number of requests with 500–1000 ms response time	-	INT	SUM
	range5	1–10s	Number of requests with 1–10s response time	-	INT	SUM
	range6	> 10s	Number of requests with response time longer than 10s	-	INT	SUM

Category	Metric	Name	Description	Unit	Data Type	Default Aggregation Mode
WebSocket summary (**total**: summary statistics)	errorCount	Errors	Total number of errors	-	INT	SUM
	invokeCount	Calls	Total number of calls	-	INT	SUM
	createSessionCount	Created Connections	Number of connections that have been created	-	INT	SUM
	closeSessionCount	Closed Connections	Number of closed connections	-	INT	SUM
	traffic	Traffic	Traffic	-	INT	SUM
	totalTime	Total RT	Total response time	-	INT	SUM

8 Privacy and Sensitive Information Protection Statement

All O&M data will be displayed on the APM console. Therefore, you are not advised to upload your privacy or sensitive data to APM. If you need to upload such data, encrypt them.

9 Data Collection

After you enable data collection, APM collects application performance metrics and tracing data. Your personal privacy data will not be collected. The collected data will be used only for application performance analysis and fault diagnosis, and will not be used for commercial purposes.

Data Type	Collected Data	Transmission Mode	Storage Mode	Function	Storage Period
Performance metric data	JVM data, exceptions, databases, SQL statements, and middleware call data	WebSocket Secure (WSS)	Tenant-based isolated storage on the server	Metric query and display at the frontend	7 days for the basic edition and 30 days for the enterprise edition. The data will be permanently deleted upon expiration.
Tracing data	Trace event data, including middleware invocation data	WSS	Tenant-based isolated storage on the server	Query and display at the tracing frontend	7 days for the basic edition and 30 days for the enterprise edition. The data will be permanently deleted upon expiration.

Data Type	Collected Data	Transmission Mode	Storage Mode	Function	Storage Period
Resource information	Service type, service name, creation time, deletion time, node address, and service release API	WSS	Tenant-based isolated storage on the server	Query and display at the resource library frontend	7 days for the basic edition and 30 days for the enterprise edition. The data will be permanently deleted upon expiration.
Resource attributes	System type, system startup event, number of CPUs, service executor, service process ID, service pod ID, CPU label, system version, web framework, JVM version, time zone, system name, collector version, and LastMail URL	WSS	Tenant-based isolated storage on the server	Query and display at the resource library frontend	7 days for the basic edition and 30 days for the enterprise edition. The data will be permanently deleted upon expiration.

Table 9-1 Restrictions on collection items

Collection Item	Maximum Value
Monitoring item rows	500
SQL length	2000 characters
SQL result bodies	100
SQL result body content	999 characters
Redis body length	100 characters
Mongo clusters	10
Mongo command length	2000 characters
HBase command length	500 characters

Collection Item	Maximum Value
ES RestClients	10
Cassandra CQL length	2000 characters
Cassandra sessions	10
Kafka MBean object names	100
Cache IP addresses corresponding to Kafka client IDs	100
RabbitMQ connection addresses	20
Cache connections for each RabbitMQ address	100
RabbitMQ consumers	500
Cache channels for each RabbitMQ consumer	100
RabbitMQ messages without ACK in each channel	3000
Manual ACK consumers in RabbitMQ cache	20
RocketMQ PIDs	20
RocketMQ client IDs	20
Jetcd tag length	500 characters
HttpClient connections	10
Report time of connection pool trace	1 ms
Dubbo invocation length	500 characters
Dubbo attachment length	500 characters
URL body length	9999 characters
Application code body length	0 characters
Java method body length	8192 characters

10 Usage Restrictions

10.1 Java

Supported Java Components and Frameworks

Currently, APM can connect to Java applications. APM supports multiple mainstream Java frameworks, web servers, communications protocols, and databases.

Table 10-1 Java components and frameworks supported by Huawei-developed Agents

Agent Type	Component	JDK 1.8	JDK 17
Huawei-developed	Dubbo	2.6.X	2.6.X
Huawei-developed	Jedis	3.X.X	3.X.X
Huawei-developed	Lettuce	5.X.X	5.X.X
Huawei-developed	ServiceComb	2.X.X	-
Huawei-developed	Log4j	1.X.X	1.X.X
Huawei-developed	Log4j2	2.X.X	2.X.X
Huawei-developed	HttpClient	4.X.X	4.X.X
Huawei-developed	JDK HttpClient	1.6–1.8	17

Agent Type	Component	JDK 1.8	JDK 17
Huawei-developed	MariaDB	2.X.X	2.X.X
Huawei-developed	MySQL	5.X.X–8.X.X	5.X.X–8.X.X
Huawei-developed	OkHttpClient	3.X.X	3.X.X
Huawei-developed	Tomcat	6.X.X–9.X.X	9.X.X
Huawei-developed	Jetty	8.X.X–9.X.X	9.X.X
Huawei-developed	gRPC	1.X.X	1.X.X
Huawei-developed	Reactor Netty	1.X.X	-
Huawei-developed	HBase	2.X.X	2.X.X
Huawei-developed	MongoDB	3.X.X–4.X.X	3.X.X–4.X.X
Huawei-developed	Redisson	3.10.X–3.16.X	3.10.X–3.16.X
Huawei-developed	c3p0	0.9.X	0.9.X
Huawei-developed	Cassandra3	3.X.X	3.X.X
Huawei-developed	ClickHouse	0.3.X	0.3.X
Huawei-developed	DBCP	2.X.X	2.X.X
Huawei-developed	Druid	1.X.X	1.X.X
Huawei-developed	HttpAsyncClient	4.X.X	4.X.X
Huawei-developed	Jetty Client	9.X.X	9.X.X
Huawei-developed	MariaDB3	3.X.X	3.X.X
Huawei-developed	MyBatis	3.X.X	3.X.X

Agent Type	Component	JDK 1.8	JDK 17
Huawei-developed	Netty	4.X.X	4.X.X
Huawei-developed	PostgreSQL	42.X.X	42.X.X
Huawei-developed	RabbitMQ	5.X.X	5.X.X
Huawei-developed	Undertow	2.X.X	2.X.X
Huawei-developed	WebSocket	9.X.X	9.X.X
Huawei-developed	Elasticsearch	7.X.X	7.X.X
Huawei-developed	Oracle	10.X.X	10.X.X
Huawei-developed	RocketMQ	4.X.X	4.X.X
Huawei-developed	Kafka	2.X.X	2.X.X
Huawei-developed	springCloudGateway	2.1.X–3.1.X	-

Table 10-2 Java components supported by SkyWalking Agents

Agent Type	Component	Version
SkyWalking	Tomcat	7–10
SkyWalking	Spring Boot Web	4.x
SkyWalking	Spring MVC	3.x, 4.x 5.x with servlet 3.x
SkyWalking	Spring MVC	6.x
SkyWalking	Nutz Web Framework	1.x
SkyWalking	Struts2 MVC	2.3.x–2.5.x
SkyWalking	Resin	3–4
SkyWalking	Jetty Server	9.x–11.x
SkyWalking	Spring WebFlux	5.x
SkyWalking	Undertow	1.3.0–2.0.27

Agent Type	Component	Version
SkyWalking	RESTEasy	3.1.0–6.2.4
SkyWalking	Play Framework	2.6.x–2.8.x
SkyWalking	Light4J Microservices Framework	1.6.x–2.x
SkyWalking	Netty SocketIO	1.x
SkyWalking	Micronaut HTTP Server	3.2.x–3.6.x
SkyWalking	Jersey REST framework	2.x–3.x
SkyWalking	Grizzly	2.3.x–4.x
SkyWalking	WebSphere Liberty	23.x
SkyWalking	Feign	9.x
SkyWalking	Netflix Spring Cloud Feign	1.1.x–2.x
SkyWalking	Okhttp	2.x–4.x
SkyWalking	Spring RestTemplate	6.x
SkyWalking	Jetty Client	9.x–11.x
SkyWalking	Apache httpcomponent AsyncClient	4.x
SkyWalking	AsyncHttpClient	2.1+
SkyWalking	JRE HttpURLConnection (Optional[2])	-
SkyWalking	Hutool-http	client 5.x
SkyWalking	Micronaut HTTP Client	3.2.x–3.6.x
SkyWalking	Spring Cloud Gateway	2.0.2.RELEASE–3.x
SkyWalking	Apache ShenYu	2.4.x
SkyWalking	Mysql Driver	5.x, 6.x, 8.x
SkyWalking	H2 Driver	1.3.x–1.4.x
SkyWalking	ShardingSphere	3.0.0, 4.0.0, 4.0.1, 4.1.0, 4.1.1, 5.0.0
SkyWalking	PostgreSQL Driver	8.x, 9.x, 42.x
SkyWalking	Mariadb Driver	2.x, 1.8
SkyWalking	InfluxDB	2.5–2.17
SkyWalking	Mssql-Jtds	1.x

Agent Type	Component	Version
SkyWalking	Mssql-jdbc	6.x–8.x
SkyWalking	ClickHouse-jdbc	0.3.x
SkyWalking	Apache-Kylin-Jdbc	2.6.x–4.x
SkyWalking	Impala-jdbc	2.6.x
SkyWalking	Dubbo	2.5.4–2.7.0
SkyWalking	Dubbox	2.8.4
SkyWalking	Apache Dubbo	2.7.x–3.x
SkyWalking	Motan	0.2.x–1.1.0
SkyWalking	gRPC	1.x
SkyWalking	Apache ServiceComb Java Chassis	1.x, 2.x
SkyWalking	SOFARPC	5.4.0
SkyWalking	Armeria	0.63.0–1.22.0
SkyWalking	Apache Avro	1.7.0–1.8.x
SkyWalking	Finagle	6.44.0–20.1.0
SkyWalking	Brpc-Java	2.3.7–3.0.5
SkyWalking	JSONRPC4J	1.2.0–1.6
SkyWalking	Nacos-Client	2.x
SkyWalking	RocketMQ	3.x–5.x
SkyWalking	RocketMQ-gRPC	5.x
SkyWalking	Kafka	0.11.0.0–3.2.3
SkyWalking	Spring Kafka Consumer	1.3.x–2.3.x
SkyWalking	ActiveMQ	5.10.0–5.15.4
SkyWalking	RabbitMQ	3.x–5.x
SkyWalking	Pulsar	2.2.x–2.9.x
SkyWalking	NATS	2.14.x–2.15.x
SkyWalking	Aliyun ONS	1.x
SkyWalking	aerospike	3.x–6.x
SkyWalking	Jedis	2.x–4.x
SkyWalking	Redisson Easy Java Redis client	3.5.2+

Agent Type	Component	Version
SkyWalking	Lettuce	5.x
SkyWalking	MongoDB Java Driver	2.13–2.14, 3.4.0–3.12.7, 4.0.0–4.1.0
SkyWalking	Spymemcached	2.x
SkyWalking	Xmemcached	2.x
SkyWalking	transport-client	5.2.x–5.6.x, 6.2.3–6.8.4, 7.0.0–7.5.2
SkyWalking	rest-high-level-client	6.7.1–6.8.4, 7.0.0–7.5.2
SkyWalking	SolrJ	7.x
SkyWalking	cassandra-java-driver	3.7.0–3.7.2
SkyWalking	hbase-client HTable	1.0.0–2.4.2
SkyWalking	Neo4j-java	4.x
SkyWalking	Zookeeper	3.4.x
SkyWalking	Spring Bean annotations	3.x–4.x
SkyWalking	Spring Core Async SuccessCallback/ FailureCallback/ ListenableFutureCallback	4.x
SkyWalking	Spring Transaction	4.x–5.x
SkyWalking	Hystrix	1.4.20–1.5.18
SkyWalking	Sentinel	1.7.0–1.8.1
SkyWalking	Elastic Job	2.x
SkyWalking	Apache ShardingSphere-Elasticjob	3.x
SkyWalking	Spring @Scheduled	3.1+
SkyWalking	Quartz Scheduler	2.x
SkyWalking	XXL Job	2.x
SkyWalking	Canal	1.0.25–1.1.2
SkyWalking	GSON	2.8.x
SkyWalking	Fastjson	1.2.x
SkyWalking	Jackson	2.x
SkyWalking	Vert.x Eventbus	3.2–4.x

Agent Type	Component	Version
SkyWalking	Vert.x Web	3.x–4.x
SkyWalking	Spring	4.x–5.x
SkyWalking	Quasar	0.7.x
SkyWalking	Ehcache	2.x
SkyWalking	GuavaCache	18.x–23.x
SkyWalking	Coroutine	1.0.1–1.3.x
SkyWalking	Graphql	8.0–17.x
SkyWalking	Alibaba Druid	1.x
SkyWalking	HikariCP	3.x–4.x
SkyWalking	Log4j	2.x
SkyWalking	Log4j2	1.2.x
SkyWalking	logback	1.2.x
SkyWalking	MyBatis	3.4.x–3.5.x
SkyWalking	GuavaEventBus	19.x–31.x-jre
SkyWalking	Undertow	2.1.x–2.6.x
SkyWalking	Grizzly	2.3.x–4.x
SkyWalking	Jetty	9.1.x–11.x

OSs Supported by APM JavaAgents

Table 10-3 OSs supported by APM JavaAgents (version 2.4.1)

Agent Type	CPU Architecture	vCPUs	Memory	Flavor	OS	System Version	Result
Huawei-developed	x86	2	4	s2.large.2	CentOS	CentOS 8.1 64-bit for GPU	Supported
Huawei-developed	x86	2	4	s2.large.2	CentOS	CentOS 7.6 64-bit for Tenant 20230712	Supported

Agent Type	CPU Architecture	vCPUs	Memory	Flavor	OS	System Version	Result
Huawei-developed	x86	2	4	s2.large.2	CentOS	CentOS 7.3 64-bit	Supported
Huawei-developed	x86	4	16	Sit3.xlarge.4	CentOS	CentOS 7.4 64-bit	Supported
Huawei-developed	x86	2	4	s2.large.2	CentOS	CentOS 6.8 64-bit	Supported
Huawei-developed	x86	2	4	s2rm.2u.4g	Debian	Debian 11.1.0 64-bit for Tenant 20221227	Supported
Huawei-developed	x86	2	4	s2.large.2	Ubuntu	Ubuntu 22.04 server 64-bit for Tenant 20230713	Supported
Huawei-developed	x86	2	4	s2.large.2	Ubuntu	Ubuntu 16.04 server 64-bit	Supported
Huawei-developed	x86	2	4	s2.large.2	Huawei Cloud EulerOS	Huawei Cloud EulerOS 2.0 Standard 64-bit for Tenant 20230606 base 2.0.2303.1	Supported
Huawei-developed	x86	2	4	s2.large.2	Huawei Cloud EulerOS	Huawei Cloud EulerOS 1.1 for CentOS 64-bit for op5 Tenant 20230217 base 1.1.2212.1	Supported
Huawei-developed	x86	2	4	s2.large.2	EulerOS	EulerOS 2.9 64-bit for Tenant 20230728 base 2.9.15	Supported

Agent Type	CPU Architecture	vCPUs	Memory	Flavor	OS	System Version	Result
Huawei-developed	x86	2	4	s2.large.2	EulerOS	EulerOS 2.5 64-bit for Tenant 2023714 base 2.5.15	Supported
Huawei-developed	x86	2	4	s2.large.2	EulerOS	EulerOS 2.2 64-bit for Tenant 20210227	Supported
Huawei-developed	x86	2	4	s2.large.2	Windows	Windows Server 2019 Standard 64-bit 40 GB	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	Huawei Cloud EulerOS	Huawei Cloud EulerOS 2.0 Standard 64-bit for Arm for Tenant 20230411 base 2.0.2303.1 (40 GiB) (bf7488b4-d9b3-4314-b2a9-e39094f573d2)	Supported (JDK 11.0.17 by default)
Huawei-developed	Kunpeng	2	4	kc1.large.2	CentOS	CentOS 7.6 64-bit with Arm	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	CentOS	CentOS 7.5 64-bit with Arm (40 GiB)	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	CentOS	CentOS 7.4 64-bit with Arm (40 GiB)	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	CentOS	Kylin Linux Advanced Server (Kunpeng) V10 (40 GiB)	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	Ubuntu	Ubuntu 18.04 64-bit with Arm (40 GiB)	Supported

Agent Type	CPU Architecture	vCPUs	Memory	Flavor	OS	System Version	Result
Huawei-developed	Kunpeng	2	4	kc1.large.2	EulerOS	EulerOS 2.9 64-bit with Arm for Tenant 20230419 base 2.9.14	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	EulerOS	EulerOS 2.8 64-bit with Arm for Tenant 20210309 (40 GiB)	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	EulerOS	EulerOS 2.10 64-bit with Arm for Tenant 20230404 base 2.10.7	Supported
Huawei-developed	Kunpeng	2	4	kc1.large.2	Fedora	Fedora 29 64-bit with Arm (40 GiB)	Supported

11 Billing

Billing

Currently, APM has two editions: basic and enterprise. After you switch from the basic edition to the enterprise edition, pay-per-use billing will apply. If you have purchased a preferential package, Agents you use will first be deducted from the package. Any excess Agents will be billed on a pay-per-use basis. For more information, see **Table 11-1**.

NOTE

- Agents will be billed based on one hour, rounded up to the nearest one hour.
- The billing unit is one enterprise-edition Agent.
- You will be billed based on this unit during pay-per-use or package billing.

Table 11-1 Billing rules

Region	Edition	Billing Mode	Preferential Package	Specifications	Price	Unit Price	Validity Period
AP-Singapore LA-Sao Paulo1	Enterprise	Preferential package	Basic package	150 Agents per day (including resources for 150 Agents in one day or for 5 Agents in 30 days)	$140 USD	$0.93 USD/Agent/day	1 year
			Medium package	1200 Agents per day (including resources for 1200 Agents in one day or for 40 Agents in 30 days)	$840 USD	$0.70 USD/Agent/day	1 year
			Advanced package	9600 Agents per day (including resources for 9600 Agents in one day or for 320 Agents in 30 days)	$5040 USD	$0.53 USD/Agent/day	1 year

Region	Edition	Billing Mode	Preferential Package	Specifications	Price	Unit Price	Validity Period
			Golden package	36,500 Agents per day (including resources for 100 Agents in 365 days)	$13,368 USD	$0.37 USD/Agent/day	1 year
			Platinum package	109,500 Agents per day (including resources for 300 Agents in 365 days)	$34,800 USD	$0.32 USD/Agent/day	1 year
			Top package	182,500 Agents per day (including resources for 500 Agents in 365 days)	$47,742 USD	$0.26 USD/Agent/day	1 year
		Pay-per-use	-	-	-	$0.96 USD/Agent/day (equivalent to $0.04 USD/Agent/hour)	-
-	Free	Free of charge. Up to 10 Agents can be connected. Reactivate them every 15 days.					

Renewal Details

Preferential packages need to be prepaid. When your package expires or is about to expire, renew it in time. If you do not renew it in time, APM functions may be affected.

Table 11-2 Renewal details

-	Sufficient Balance	Insufficient Balance or Account in Arrears	Retention Period
APM status	You can use APM normally.	Your account is frozen. APM does not collect or display new application data, but still displays the data collected before your account is frozen.	

-	Sufficient Balance	Insufficient Balance or Account in Arrears	Retention Period
Renewal details	If you renew your preferential package in time, you can use APM normally.	If you top up your account, APM automatically unfreezes your account and you will be billed on a pay-per-use basis. If you need a preferential package, renew your existing package or purchase a new one. Otherwise, you will be billed on a pay-per-use basis. For details, see **Manually Renewing a Resource**.	
	If you do not renew your preferential package, APM automatically switches to the pay-per-use billing mode.	If you do not top up your account and the retention period expires, APM releases all your resources and you will not be billed in this period.	

12 JavaAgent Updates

Table 12-1 JavaAgent updates

Version	Description
2.4.4	1. Supported Spring Cloud Gateway (2.1.0-3.1.0).
2.4.3	1. Fixed the problem that the number of exceptions is not reset. 2. Fixed the problem that logs are too large. 3. Added basic Redisson information.
2.4.2	Allowed users to disable Transform in function scenarios.
2.4.2-JDK17	Intended for JDK17 only.
2.4.2	Allowed the Agent to be disabled during FunctionGraph startup.
2.4.1	1. Supported dynamic settings for the metric collection threshold. 2. Displayed **Exceptions** in the URL summary. It is the number of exceptions marked in URL logs. 3. Supported data transmission through a proxy.
2.3.19	1. Printed trace IDs in logs. 2. Provided more thread details.
2.3.17	1. Read an AK/SK from environment variables. 2. Added SQL IDs to traces. 3. Added the latest trace for SQL. 4. Added cluster-based analysis for URLs.
2.3.16	1. Supported registration with a specified protocol. 2. Compatible with the IBM SDK that does not return the thread memory.

Version	Description
2.3.15	1. Added support for Dubbo 2.8.x. 2. Supported JDK HTTP subclasses.
2.3.13	1. Supported multi-key BizCode for CSE Provider. 2. Supported the Hikari plug-in.
2.3.12	1. Continued to collect keys even though the number of HashMap keys exceeds the threshold. 2. Supported automatic URL normalization. After this function is enabled in the backend, URLs are normalized based on the original format. 3. Supported the collection of rows read and updated for the Oracle plug-in. 4. Supported the display of BizCode for CSE Provider. 5. (CSE Provider) Marked the trace in red when status code 400 is returned.
2.3.5	1. Supported configuration of an access address in the startup script.
2.3.2	1. Supported Jetty-client. 2. Canceled the support for com.huawei.bsp.commonlib.roa.restclient. 3. Supported collection of Apdex values for the URL collector.
2.3.1	1. Supported SK decryption on CCE. 2. Supported key and value interception for the Jedis collector. 3. Supported Cassandra3.
2.2.15	1. Supported custom SK decryption. 2. Supported configuration of a master address in the startup script. 3. Supported collection of response bodies for the apacheHttpclient collector.
2.2.13	1. Returned original bytecodes when NamedTransformer is used to load interface classes. 2. Solved the problem that MariaDB 3.0.4 SQL data cannot be collected. 3. Supported the Oracle plug-in.
2.2.10	1. Supported the gauss-zenith database. 2. Supported com.huawei.bsp.commonlib.roa.restclient.
2.2.9	1. Supported jetcd 5.x–6.x. 2. Supported collection of Netty direct memory.

Table 12-2 Latest JavaAgent versions on CCE and ServiceStage

Version	Actual Version
latest-x86_64	2.4.3; supporting x86 architecture
latest-aarch64	2.4.3; supporting the Arm architecture
latest-noroot-x86_64	2.4.3; supporting the x86 architecture and allowing non-root users to run containers
latest-noroot-aarch64	2.4.3; supporting the Arm architecture and allowing non-root users to run containers
latest	2.1.7; compatible with x86 and Arm architectures

