CodeArts Pipeline

Service Overview

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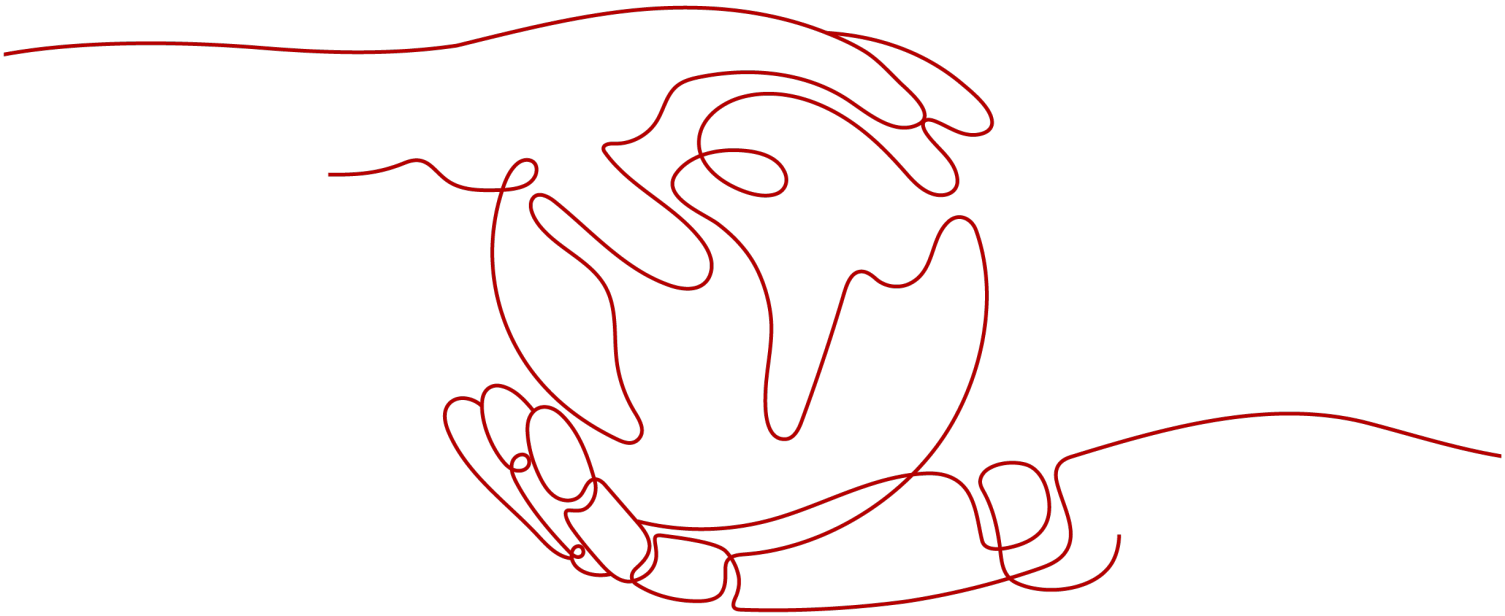

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Contents

1 What Is CodeArts Pipeline?

CodeArts Pipeline provides visualized continuous integration and continuous delivery (CI/CD) pipelines that can be orchestrated. It helps enterprises quickly realize continuous delivery and efficient automation in DevOps, shortens the time to market (TTM) of applications, and improves R&D efficiency.

This service is essentially a visualized and automated task scheduling platform. It needs to be used together with automation tasks of services such as CodeArts Build, CodeArts Check, CodeArts TestPlan, and CodeArts Deploy in software development pipeline. You can orchestrate these automation tasks based on your requirements, such as application deployment in the development, test, or production environment. After the tasks are configured, they can be automatically triggered, scheduled, and executed to avoid frequent and inefficient manual operations.

CodeArts Pipeline provides the following functions:

- Allows you to add, delete, edit, and query pipeline tasks in a visualized manner.
- Supports permissions control based on accounts, roles, and pipeline operations.
- Supports management and scheduling of multiple task types, such as build, code check, subpipeline, repository management, deployment, extension type, API Test, and pipeline control (delayed execution and manual review).
- Allows you to add, delete, and edit pipeline stages as required.
- Allows you to configure serial and parallel execution of managed tasks in each pipeline stage.
- Allows you to configure parameters for pipeline execution.
- Allows you to select and execute some tasks in a pipeline.
- Allows you to view pipeline execution records.
- Allows you to configure one or more of the following execution plans: continuous integration, merge requests, and scheduled execution. Once conditions specified in one execution plan are met, a pipeline can be automatically triggered and executed.
- Supports pipeline event notifications by message and email.
- Allows you to customize extensions for more pipeline execution functions.

- Allows you to create rules and policies for unified management and control of pipeline quality.
- Supports microservice-based DevOps lightweight change mode.
- Supports open-source dependency parsing based on source code and vulnerability interception.

What Are Rules/Policies?

CodeArts Pipeline allows you to manage pass conditions in pipeline stages based on rules and policies. You can create appropriate rules using extensions, set the threshold comparison conditions, reference the conditions in policies, and apply them in pass conditions. A policy is a set of rules. CodeArts Pipeline supports hierarchical policy management by tenant or project, facilitating efficient project management and ensuring product delivery quality.

What Are Extensions?

CodeArts Pipeline provides a series of extensions for you to use during task orchestration. You will be able to customize pipeline extensions to expand the business scope using automatic pipeline scheduling capabilities.

What Are Microservices?

A microservice is a software governance architecture. A large-scale complex software project consists of one or more microservices. Microservices in the system are loosely coupled. You can develop, build, verify, deploy, and roll out microservices parallelly. Microservices have the following advantages:

- Clear boundaries: Each microservice focuses only on one function. It is relatively easy to develop and maintain a single microservice.
- Independent deployment: A single microservice is independently deployed and updated, ensuring 24/7 service.
- Diversified technologies: Microservices can be implemented using different technology stacks. Different services communicate with each other through RESTful APIs. Each service can be implemented using different technology frameworks and vaults.

What Are Changes?

A change is an R&D delivery activity. Project R&D requirements can be met and vulnerabilities can be fixed using changes. One change belongs to only one microservice.

A change has its own release lifecycle, including developing, to release, releasing, and released. One or more changes can be released through the change pipeline for quick project delivery. In addition, pass conditions and review processes can be added to changes for quality control.

2 Functions

The following table describes the main functions of pipeline service.

Function	Description
Custom pipeline orchestration	You can manage and orchestrate multiple types of automated tasks, such as build, code check, subpipeline, repository management, deployment, API Test, and pipeline control (delayed execution and manual review), based on application scenario requirements.
Pipeline adding, deletion, modification, and query in a visualized manner	Pipeline creation, editing, deletion, and execution status query on the GUI. You can switch to the corresponding task page to view details such as logs.
Pipeline permission management	You can configure default pipeline permissions of each role in a project and configure the view, edit, execute, and delete permissions of each role and member in a pipeline task.
Pipeline execution records	You can view the pipeline records in past 31 days.
Notifications	You can set whether to send service message and email notifications for an event.
Execution of some tasks in a pipeline	One or more tasks in the pipeline can be executed independently.

Function	Description
Pipeline execution parameter configuration	This service allows you to add custom parameters. Tasks added to a pipeline can reference the custom parameters. When you are executing a pipeline, you can modify the default values of those custom parameters and then use the new parameter values to execute the pipeline.
Pipeline serial or parallel execution configuration	You can configure serial or parallel execution of tasks at a stage as needed.

The following table describes the main functions of policies.

Function	Description
Hierarchical policy management	Policies are available at both the tenant and project levels to implement global tenant management and project management respectively.
Rule customization	You can use system-defined rules or customize rules using extensions provided in the extension market.
Policy use in pipelines	You can use policies as pass conditions during task orchestration.
Policy replication	You can quickly create a policy by copying a tenant-level or project-level policy. In addition, you can copy a tenant-level policy as a project-level policy in a project.
Policy inheritance	You can inherit tenant-level policies in a project under the tenant.

The following table describes the main functions of extensions.

Function	Description
System extensions	The extension platform has 12 built-in system extensions to meet daily DevOps requirements.

3 Use Cases

General Software Development

- Requirements and challenges: Build, packaging, code check, test, and deployment are required during software development. Managing multiple independent activities is complex and costly.
- Use mode: Pipeline associates and manages multiple activities in the development process and executes multiple activities parallelly or serially.

DevOps and CI/CD

- Requirements and challenges: The traditional DevOps process (from code change to build, test, and deployment) is complex and time-consuming.
- Use mode: Pipeline connects multiple types of tasks, such as test, build, and deployment. With pass conditions, only code that passes the automation test can be delivered and deployed, which ensures product quality.

Pipeline Cascading Management

- Requirements and challenges: Applications of various project types are complex. Different projects are associated and dependent on each other. The layered microservice architecture requires heavy manual workload.
- Use mode: Subpipelines can be cascaded to the main pipeline, allowing you to easily manage complex scenarios such as build or microservice dependency.

4 Constraints

Table 4-1 CodeArts Pipeline constraints

Category	Item	Limit
CodeArts Pipeline	Maximum number of pipelines of a tenant	5000
	Maximum number of pipelines in a project	500
Single pipeline	Maximum number of stages	16
	Maximum number of jobs	256
	Maximum number of jobs in a stage	100
	Maximum number of steps	512
	Maximum number of steps in a job	16
	Maximum number of custom parameters	20
	Maximum number of source code repositories	1
	Maximum number of reviewers per task	10
	Maximum number of times that a task can be delayed for execution	3
	Maximum number of concurrent executions	5

Category	Item	Limit
	Maximum number of days for storing historical execution records	31
	Maximum number of scheduled tasks	10
	Maximum number of lawfully listened branch conditions	32
	Maximum number of lawfully listened path conditions	32

Table 4-2 Policy constraints

Category	Item	Limit
Policy management	Maximum number of user-defined rules of a tenant	2000
	Maximum number of project-level rule sets in all projects of a tenant	1000
	Maximum number of user-defined rule sets of a tenant	100
	Maximum number of user-defined rule sets in a project	100
	Maximum number of user-defined rules in a rule set	100

Table 4-3 Microservice constraints

Category	Item	Limit
Microservice	Maximum number of microservices of a tenant	500
	Maximum number of microservices in a project	50

Table 4-4 Change constraints

Category	Item	Limit
Change	Maximum number of changes in progress under a microservice (that is, the total number of changes in the developing, to-be-released, and releasing states)	50
	Maximum number of work items associated with a single change	10
	Maximum number of running changes in the release pipeline	10

