CodeArts Build

Service Overview

Issue 01

Date 2025-01-22

HUAWEI TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.
All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Security Declaration

Vulnerability

Huawei's regulations on product vulnerability management are subject to the *Vul. Response Process.* For details about this process, visit the following web page:
https://www.huawei.com/en/psirt/vul-response-process
For vulnerability information, enterprise customers can visit the following web page:
https://securitybulletin.huawei.com/enterprise/en/security-advisory

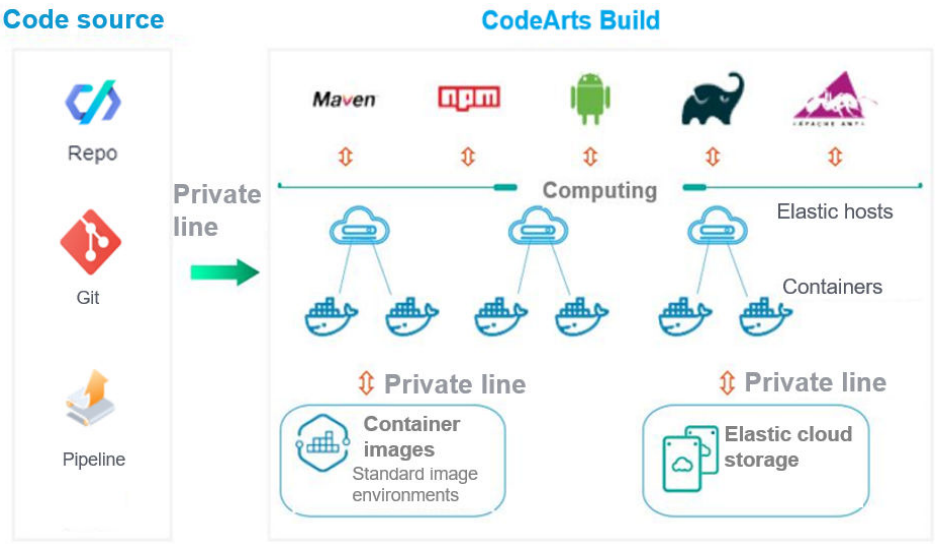
Contents

1 What Is CodeArts Build?..... 1
2 Advantages..... 2
3 Use Cases..... 3
4 Build Tools and Versions..... 5
5 Security..... 24
5.1 Shared Responsibilities..... 24
5.2 Authentication and Access Control..... 25
5.3 Data Protection Technologies..... 26
5.4 Cloud Trace Service (CTS)..... 26
5.5 Service Resilience..... 27
5.6 Certificates..... 27
6 Notes and Constraints..... 29
7 Concepts..... 31

1 What Is CodeArts Build?

Build refers to the process of compiling source code into one or more target files, and packaging these target files along with configuration and resource files.

CodeArts Build provides an easy-to-use, cloud-based build platform that supports multiple programming languages, helping you achieve continuous delivery with higher efficiency. With just a few clicks, you can easily create, configure, and run build tasks to automate code retrieval, build, and packaging. CodeArts Build also monitors build status in real time.



Container-based build

CodeArts Build provides container-based build environments and supports two types of container images:

- System images: provided by CodeArts Build for compilation and packaging with popular programming languages.
- Custom images: customized for compilation and packaging with multiple languages and stored in SWR.

2 Advantages

All-scenario

CodeArts Build supports multiple programming languages and frameworks to suit popular software development scenarios.

- Supported languages: C, C++, C#, Java, Python, JavaScript, Go, PHP, .NET, and Groovy.
- Supported frameworks: Maven, Gradle, Ant, npm, CMake and Android. For details, see **Build Environment**.

Fast

Massive build resources are available on the cloud, and various cloud-hosted build acceleration methods are used to achieve a speed that is impossible for local builds.

- Elastic resources in the cloud and task execution in parallel
- Global- and tenant-level cache
- Direct Connect for faster transmission

Scalable

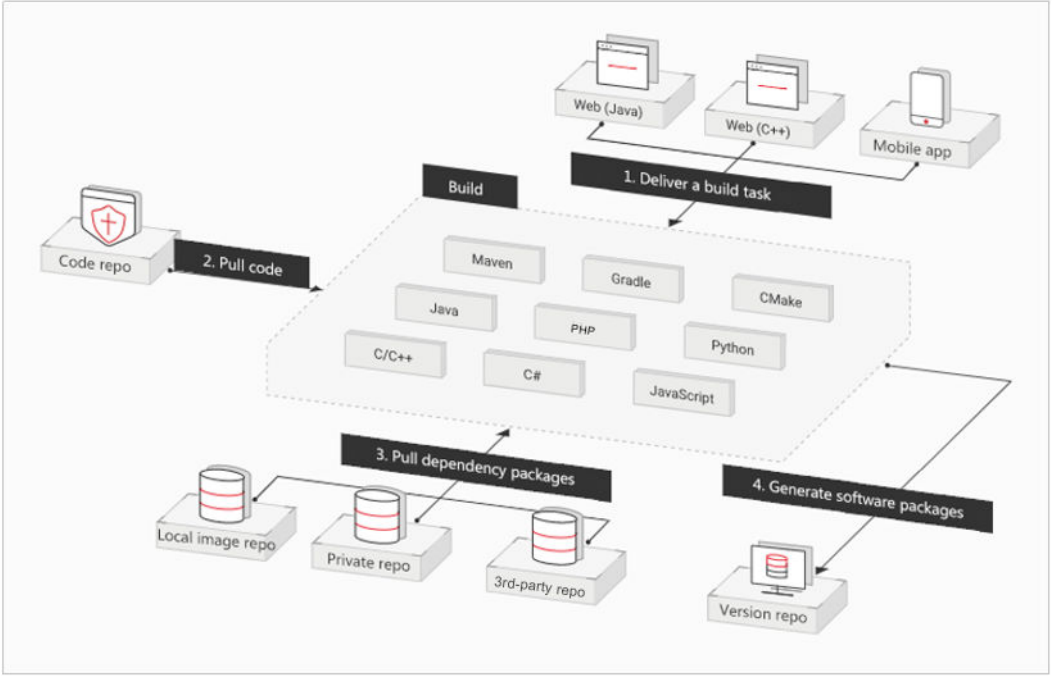
CodeArts Build can flexibly interconnect with different code hosting services and provides the following features:

- Customized build environments
- Diverse source code hosting services
- Continuous integration clusters

Cost-effective

- You are billed for the actual resource usage and duration, so CodeArts Build eliminates the need to invest in hardware resources and maintenance, greatly reducing build costs.
- Servers are centrally maintained by CodeArts, greatly reducing maintenance costs.

3 Use Cases



Internet Web Applications

- Requirements and challenges: As the number of Internet service types increases, cross-platform services and multi-language programming have become a trend.
- Benefits: CodeArts Build can be used to build frontend and backend programs of web applications. It supports languages and frameworks such as Java, Angular, and Node.js, and build standards such as Maven and Ant.

Computer Applications

- Requirements and challenges: Legacy computer applications run locally at a large scale. Services are complex, and the build process is time-consuming.
- Benefits: On-demand resource allocation speeds up the build. Using CodeArts Build, you can build C and C++ applications in Linux and C, C++, and C# applications in Windows.

Mobile Apps

- Requirements and challenges: Services on mobile apps change frequently, requiring quick and smooth delivery.
- Benefits: Cloud-based parallel compilation technology is used to shorten the delivery period. Using CodeArts Build, you can quickly build Android mobile apps.

4 Build Tools and Versions

This section lists the build tools and versions supported by CodeArts Build.

CodeArts Build utilizes the EulerOS base image and offers various versions of build environments, which are outlined in the following tables.

Building with Maven

Tool Version	Built-in Tool
maven3.9.5-jdk21	Maven 3.9.5, OpenJDK 21, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
maven3.9.5-jdk17	Maven 3.9.5, OpenJDK 17, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
maven3.8.5-jdk17	Maven 3.8.5, OpenJDK 17, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
maven3.6.3-jdk11	Maven 3.6.3, OpenJDK 11, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
maven3.6.1-jdk10	Maven 3.6.1, OpenJDK 10.0.2, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
maven3.5.3-jdk8-open	Maven 3.5.3, OpenJDK 1.8.0_40, curl 7.29.0, and Wget 1.14
maven3.5.3-jdk7	Maven 3.5.3, OpenJDK 1.7.0_75, Zip 3.0, and UnZip 6.0

Building with Android

Build Environment	Built-in Tool
Basic environment	
Android	Git, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
Optional environments	
Gradle	Gradle 2.13, 2.14.1, 3.3, 4.1–5.6, 6.0–7.3, 8.0, 8.2.1, and Gradle_Wrapper
JDK	OpenJDK 1.7–1.9 and 10–17
NDK	NDK 16–23 and 25

Building with npm

Tool Version	Built-in Tool
nodejs 8.11.2	• Node v8.11.2, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.1.0	• Node v10.1.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.15.3	• Node v10.15.3, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 12.7.0	• Node v12.7.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 13	• Node v13, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 14	• Node v14, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 15	• Node v15, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 16	• Node v16, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 18	• Node v18, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 20	• Node v20, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 21	• Node v21, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 22	• Node v22, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Building with Yarn

Tool Version	Built-in Tool
nodejs 8.11.2	• Node v8.11.2, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.1.0	• Node v10.1.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.15.3	• Node v10.15.3, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 12.7.0	• Node v12.7.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 13	• Node v13, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 14	• Node v14, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 15	• Node v15, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 16	• Node v16, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 18	• Node v18, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 20	• Node v20, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 21	• Node v21, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 22	• Node v22, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Building with Gradle

Build Environment	Built-in Tool
Basic environment	Git, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
Optional environments	
Gradle	Gradle 2.13, 2.14.1, 3.3, 4.1–5.6, 6.0–7.3, 8.0, 8.2.1, and Gradle_Wrapper
JDK	OpenJDK 1.7–1.9, 10–17, and 21

Building with Mono

Tool Version	Built-in Tool
mono6-msbuild16-dotnetcoresdk8.0	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 8.0, or their later versions.
mono6-msbuild16-dotnetcoresdk7.0	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 7.0, or their later versions.
mono6-msbuild16-dotnetcoresdk6.0	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 6.0, or their later versions.

Tool Version	Built-in Tool
mono6-msbuild16-dotnetcoresdk5.0	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 5.0, or their later versions.
mono6-msbuild16-dotnetcoresdk3.1	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 3.1, or their later versions.
mono6-msbuild16-dotnetcoresdk3.0	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 3.0, or their later versions.
mono6-msbuild16-dotnetcoresdk2.2	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 2.2, or their later versions.
mono6-msbuild16-dotnetcoresdk2.1	Preinstalled with common tools such as MSBuild 16.1.76, NuGet, and .NET Framework 4.8. Select this image (compatible with historical tasks yet incompatible with the MSBuild-all image) when the project uses .NET Framework 4.0, .NET Core 2.1, or their later versions.

Building with Grunt

Tool Version	Built-in Tool
nodejs 8.11.2	• Node v8.11.2, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.1.0	• Node v10.1.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 10.15.3	• Node v10.15.3, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 12.7.0	• Node v12.7.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 13	• Node v13, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 14	• Node v14, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 15	• Node v15, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 16	• Node v16, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 18	• Node v18, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 20	• Node v20, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 21	• Node v21, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 22	• Node v22, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Building with Setuptools/PyInstaller

Tool Version	Built-in Tool
Python2.7	• Python 2.7, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.5	• Python 3.5, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.6	• Python 3.6, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k

Tool Version	Built-in Tool
Python3.7	• Python 3.7, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.8	• Python 3.8, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.9	• Python 3.9, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.10	• Python 3.10, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.11	• Python 3.11, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k
Python3.12	• Python 3.12, Setuptools 39.1.0, pip 10.0.1, PyInstaller, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, GCC 4.8.5, GCC-C++ 4.8.5, libgcc.x86_64 4.8.5, libgcc.i686 4.8.5, and libtool 2.4.2 • automake 1.13.4, autoconf 2.69, zlib 1.2.7, zlib-devel 1.2.7, and openssl-devel 1.0.2k

Running Shell Commands

To run shell commands, you can use the general image **shell4.2.46-git1.8.3-zip6.00**, which is built on EulerOS. This image comes with pre-installed tools like Zip, UnZip, sudo, Git, and Wget.

Tool Version	Built-in Tool
shell4.2.46-git1.8.3-zip6.00	Git, Wget 1.14, Zip 3.0, UnZip 6.0, and sudo 1.8.19p2

Building with Gulp

Tool Version	Built-in Tool
nodejs 8.11.2	• Node v8.11.2, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.1.0	• Node v10.1.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.15.3	• Node v10.15.3, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 12.7.0	• Node v12.7.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 13	• Node v13, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 14	• Node v14, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 15	• Node v15, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 16	• Node v16, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 18	• Node v18, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 20	• Node v20, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 21	• Node v21, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 22	• Node v22, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Building with GNU Arm

The EulerOS base image comes with pre-installed software like make, GCC, G++, 32-bit C runtime library, and binary tool library. The following tool versions are available:

- gnuarm201405

  This image includes CodeSourcery's GCC-based Arm toolchain, which can cross-compile all code for the Arm system, including bare-metal programs, U-Boot, Linux kernel, file systems, and application programs.

- gnuarm-linux-gcc-4.4.3

  This image is compatible with embedded-application binary interface (EABI) and serves as a cross-compiler for earlier Linux versions.

- gnuarm-7-2018-q2-update

  This image includes Arm embedded GCC compilers, libraries, and other GNU tools necessary for bare-metal software development on servers with Arm Cortex-M and Cortex-R processors.

Tool Version	Built-in Tool
gnuarm201405	arm-2014.05-29-arm-none-linux-gnueabi-i686-pc-linux-gnu, Git, Wget 1.14, Zip 3.0, Unzip 6.0, GCC-C++ 4.8.5, bzip2 1.0.6, file 5.11, glibc.i686 2.17, ncurses-devel.i686 2.9, binutils-devel.i686 2.27, and zlib 1.2.7
gnuarm-linux-gcc-4.4.3	arm-linux-gcc-4.4.3-20100728, Git, Wget 1.14, Zip 3.0, Unzip 6.0, GCC-C++ 4.8.5, bzip2 1.0.6, file 5.11, glibc.i686 2.17, ncurses-devel.i686 5.9, binutils-devel.i686 2.27, zlib 1.2.7, and gzip 1.5
gnuarm-7-2018-q2-update	gcc-arm-none-eabi-7-2018-q2-update-linux2, Git, Wget 1.14, Zip 3.0, Unzip 6.0, GCC-C++ 4.8.5, bzip2 1.0.6, file 5.11, glibc.i686 2.17, ncurses-devel.i686 5.9, binutils-devel.i686 2.27, zlib 1.2.7, and gzip 1.5

Building with CMake

Tool Version	Built-in Tool
cmake2.8.12-gcc4.8.5	• CMake 2.8.12, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 4.8.5, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, zlib-devel 1.2.7, libgcc.i686 4.8.5, and libgcc.x86_64 4.8.5
cmake2.8.12-gcc5.5.0	• CMake 2.8.12, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 5.5.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, and zlib-devel 1.2.7 • libgcc.i686 4.8.5 and libgcc.x86_64 4.8.5

Tool Version	Built-in Tool
cmake2.8.12-gcc6.4.0	• CMake 2.8.12, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 6.4.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, and zlib-devel 1.2.7 • libgcc.i686 4.8.5 and libgcc.x86_64 4.8.5
cmake2.8.12-gcc7.3.0	• CMake 2.8.12, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 7.3.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, and zlib-devel 1.2.7 • libgcc.i686 4.8.5 and libgcc.x86_64 4.8.5
cmake3.10.1-gcc4.8.5	• CMake 3.10.1, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 4.8.5, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, zlib-devel 1.2.7, libgcc.i686 4.8.5, and libgcc.x86_64 4.8.5
cmake3.10.1-gcc5.5.0	• CMake 3.10.1, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 5.5.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, and zlib-devel 1.2.7 • libgcc.i686 4.8.5, libgcc.x86_64 4.8.5, isl 0.15, mpfr 2.4.2, gmp 4.3.2, and mpc 0.8.1
cmake3.10.1-gcc6.4.0	• CMake 3.10.1, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 6.4.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, and zlib-devel 1.2.7 • libgcc.i686 4.8.5, libgcc.x86_64 4.8.5, isl 0.15, mpfr 2.4.2, gmp 4.3.2, and mpc 0.8.1
cmake3.10.1-gcc7.3.0	• CMake 3.10.1, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 7.3.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, and zlib-devel 1.2.7 • libgcc.i686 4.8.5, libgcc.x86_64 4.8.5, isl 0.16.1, mpfr 3.1.4, gmp 6.1.0, and mpc 1.0.3
cmake3.15.5-gcc8.3.0	• CMake 3.15.5, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 8.3.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, zlib-devel 1.2.7, libgcc.i686 4.8.5, and libgcc.x86_64 4.8.5
cmake3.16.0-gcc9.2.0	• CMake 3.16.0, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 9.2.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, zlib-devel 1.2.7, libgcc.i686 4.8.5, and libgcc.x86_64 4.8.5

Tool Version	Built-in Tool
cmake3.16.5-gcc7.3.0	• CMake 3.16.5, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 7.3.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, zlib-devel 1.2.7, libgcc.i686 4.8.5, and libgcc.x86_64 4.8.5
cmake3.26.5-gcc13.1.0	• CMake 326.5, OpenJDK 1.8.0_191, Git, Wget 1.14, bzip2 1.0.6, and make 3.82 • GCC 13.1.0, GCC-C++ 4.8.5, libstdc++-devel 4.8.5, zlib-devel 1.2.7, libgcc.i686 4.8.5, and libgcc.x86_64 4.8.5

Building with Ant

Tool Version	Built-in Tool
ant1.9.4-jdk1.8	Ant 1.9.4, OpenJDK 1.8.0_40, Git, Wget 1.14, and bzip2 1.0.6
ant1.10.1-jdk1.8	Ant 1.10.1, OpenJDK 1.8.0_40, Git, Wget 1.14, and bzip2 1.0.6
ant1.10.3-jdk1.8	Ant 1.10.3, OpenJDK 1.8.0_40, Git, Wget 1.14, and bzip2 1.0.6
ant1.10.13-jdk1.8	Ant 1.10.13, OpenJDK 1.8.0_40, Git, Wget 1.14, and bzip2 1.0.6

Building with Go

Tool Version	Built-in Tool
go-1.10.3	Go 1.10.3, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.11.6	Go 1.11.6, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.12.1	Go 1.12.1, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.13.1	Go 1.13.1, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.14	Go 1.14, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.15	Go 1.15, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.16	Go 1.16, Git, GCC 4.8.5, and GCC-C++ 4.8.5

Tool Version	Built-in Tool
go-1.17	Go 1.17, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.18	Go 1.18, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.19	Go 1.19, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.20	Go 1.20, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.21	Go 1.21, Git, GCC 4.8.5, and GCC-C++ 4.8.5
go-1.22	Go 1.22, Git, GCC 4.8.5, and GCC-C++ 4.8.5

Building Android App with Ionic

Build Environment	Built-in Tool
Basic environment	
Android	Git, Zip 3.0, UnZip 6.0, curl 7.29.0, and Wget 1.14
Optional environments	
Gradle	Gradle 2.13, 2.14.1, 3.3, 4.1–5.6, and 6.0–7.3
JDK	OpenJDK 1.6–1.9 and 10–16
NDK	Android-NDK-15, Android-NDK-16, Android-NDK-17, Android-NDK-18, Android-NDK-19, Android-NDK-20, Android-NDK-21, Android-NDK-22, and Android-NDK-23

Building Android Quick App

Tool Version	Built-in Tool
nodejs 8.11.2	• Node v8.11.2, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 10.1.0	• Node v10.1.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 10.15.3	• Node v10.15.3, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 12.7.0	• Node v12.7.0, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, and UnZip 6.0 • make 3.82, curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, and automake 1.13.4 • autoconf 2.69, libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 13	• Node v13, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 14	• Node v14, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 15	• Node v15, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 16	• Node v16, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Tool Version	Built-in Tool
nodejs 18	• Node v18, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 20	• Node v20, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 21	• Node v21, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0
nodejs 22	• Node v22, OpenJDK 1.8.0_40, Git, Wget 1.14, Zip 3.0, UnZip 6.0, and make 3.82 • curl 7.29.0, GCC 4.8.5, GCC-C++ 4.8.5, Ant 1.9.4, automake 1.13.4, and autoconf 2.69 • libtool 2.4.2, python-devel 2.7.5, and kernel-headers 3.10.0

Building with Flutter

Tool Version	Built-in Tool
Flutter	Flutter 1.17.5, Flutter 1.20.4, Flutter 1.22.6, Flutter 2.0.6, Flutter 2.2.3, Flutter 2.5.3, Flutter 2.8.1, and Flutter 2.10.4
JDK	OpenJDK 1.7–1.9 and 10–16
NDK	NDK 16.1.4479499, NDK 17.2.4988734, NDK 18.1.5063045, NDK 19.2.5345600, NDK 20.1.5948944, NDK 21.4.7075529, NDK 22.1.7171670, and NDK 23.1.7779620

Building with Bazel

Tool Version	Built-in Tool
bazel1.1.0-jdk1.8-gcc4.8.5	Bazel 1.1.0, JDK 1.8, and GCC 4.8.5
bazel1.1.0-jdk11-gcc4.8.5	Bazel 1.1.0, JDK 11, and GCC 4.8.5

Building with Grails

Tool Version	Built-in Tool
grails2.3.0-jdk1.8	Grails 2.3.0 and JDK 1.8
grails2.3.11-jdk1.8	Grails 2.3.11 and JDK 1.8
grails2.4.3-jdk1.8	Grails 2.4.3 and JDK 1.8
grails2.4.4-jdk1.8	Grails 2.4.4 and JDK1.8
grails2.5.3-jdk1.8	Grails 2.5.3 and JDK 1.8
grails2.5.5-jdk1.8	Grails 2.5.5 and JDK 1.8
grails2.5.0-jdk1.8	Grails 2.5.0 and JDK 1.8
grails5.3.3-jdk17	Grails 5.3.3 and JDK 17

Building in PHP

Tool Version	Built-in Tool
php5.6.40	PHP 5.6.40
php7.3.3	PHP 7.3.3
php8.0.30	PHP 8.0.30

5 Security

5.1 Shared Responsibilities

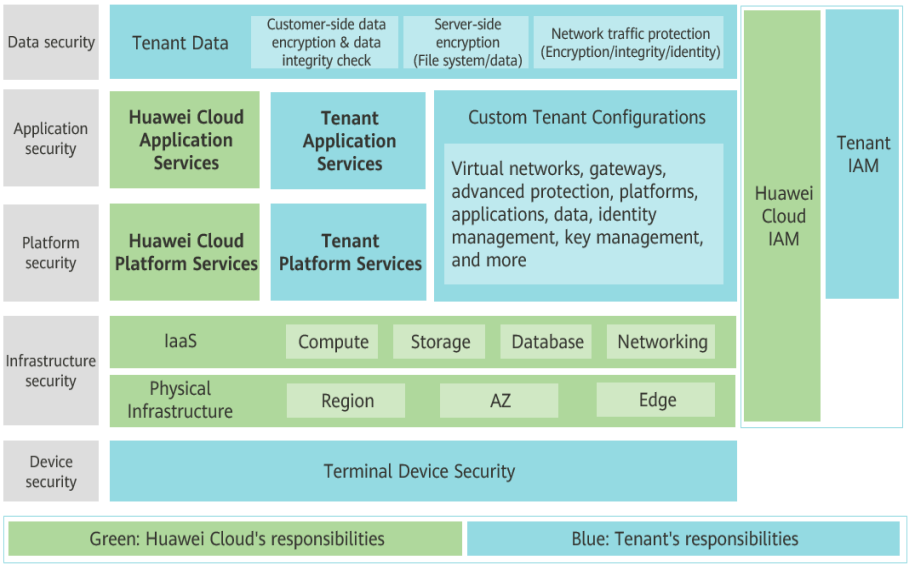
Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system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

Figure 5-1 illustrates the responsibilities shared by Huawei Cloud and users.

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

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

Figure 5-1 Huawei Cloud shared security responsibility model



5.2 Authentication and Access Control

Identity Authentication

You can access CodeArts Build using its UI and APIs. Regardless of the access mode, your requests are sent through REST **APIs** provided by CodeArts Build.

CodeArts Build APIs can be accessed only after requests are authenticated. CodeArts Build supports two authentication modes:

- Token: Requests are authenticated using tokens. By default, token authentication is required to access the CodeArts Build console.
- AK/SK: Requests are encrypted using an AK (Access Key ID)/SK (Secret Access Key) pair. This method is recommended because it provides higher security than token-based authentication. For operation details, see **AK/SK Signing and Authentication Guide**.
- For more authentication details and how to obtain tokens and signatures, see **Authentication**.

Access Control

CodeArts Build supports access control through IAM permissions.

Table 5-1 CodeArts Build access control

Method		Description	Reference
Permission management	IAM permissions	IAM permissions control access to your cloud resources by specifying allowed and denied actions. By default, new IAM users do not have any permissions assigned. To grant permissions, add these users to one or more groups and associate permission policies or roles with those groups.	**IAM Service Overview** **Permission Description**

5.3 Data Protection Technologies

CodeArts Build takes different methods and features to keep data secure and reliable.

Table 5-2 CodeArts Build data protection methods and features

Method	Description	Reference
Transmission encryption (HTTPS)	All CodeArts Build APIs use HTTPS for transmission.	**Making an API Request**
Personal data protection	CodeArts Build controls access to data and records logs by Cloud Trace Service (CTS) for operations performed on the data.	**Operations Recorded by CTS**
Privacy protection	CodeArts Build encrypts sensitive data such as database account information of users before storing it, supports encryption key rotation.	-
Data clearing	Sensitive data is deleted immediately after builds are complete.	-
Data backup	CodeArts Build supports user data backup.	-

5.4 Cloud Trace Service (CTS)

Cloud Trace Service (CTS) records operations on the cloud resources in your account. You can use the logs generated by CTS to perform security analysis, track resource changes, audit compliance, and locate faults.

After you enable CTS and configure a tracker, CTS can record management and data traces of CodeArts Build for auditing.

For details about how to enable and configure CTS, see **Enabling CTS**.

For details about CodeArts Build operations that can be traced, see **Operations Recorded by CTS**.

5.5 Service Resilience

Cross-AZ DR Deployment

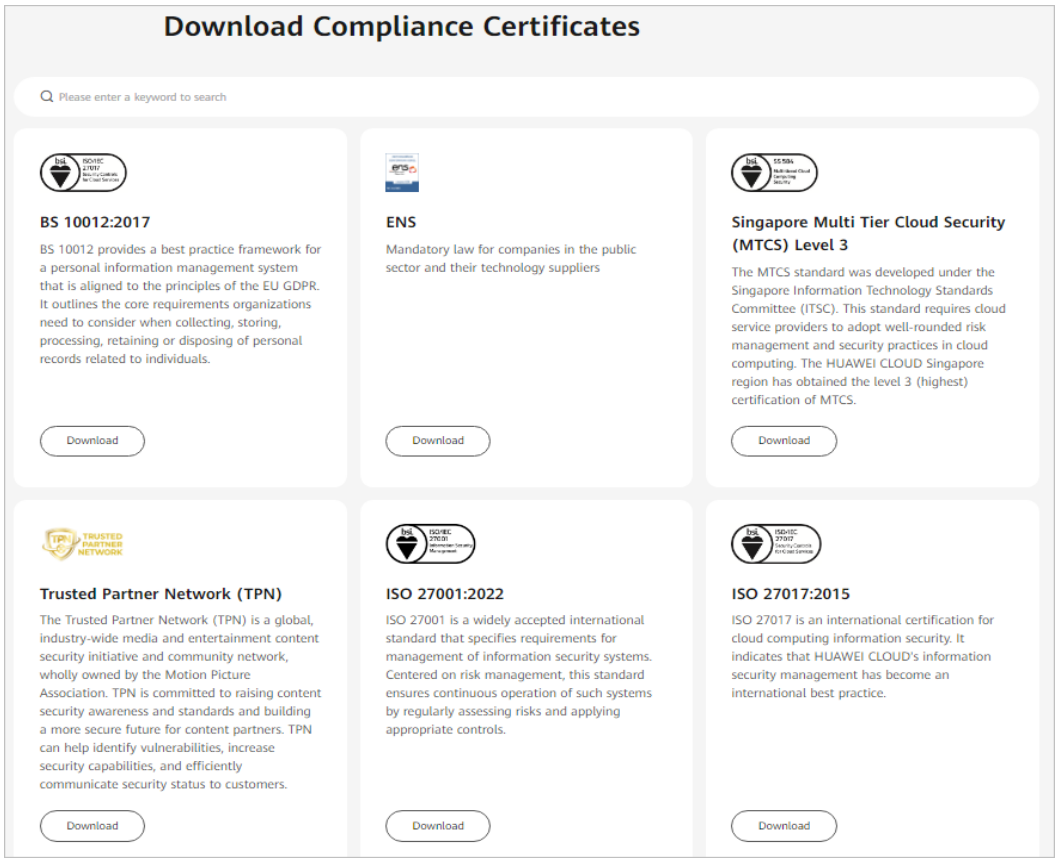
CodeArts Build uses cross-AZ deployment and inter-AZ data DR solutions. A homogeneous CodeArts Build DR cluster is deployed in another AZ (cross-AZ). If a natural disaster occurs in the geographical location of a production cluster or a fault occurs in the cluster, the production cluster cannot provide read and write services. In this case, the DR cluster can be switched to the production cluster to ensure that service processes can be quickly started and recovered for continuity and reliability.

5.6 Certificates

Compliance Certificates

Huawei Cloud services and platforms have obtained various security and compliance certifications from authoritative organizations, such as International Organization for Standardization (ISO). You can **download** them from the console.

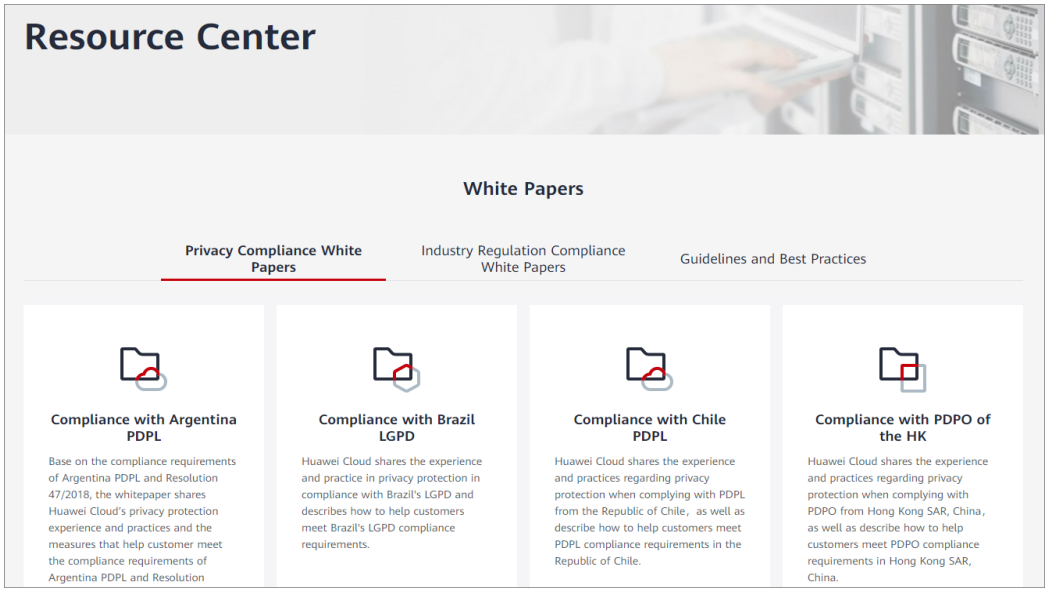
Figure 5-2 Downloading compliance certificates



Resource Center

Huawei Cloud also provides the following resources to help users meet compliance requirements. For details, see **Resource Center**.

Figure 5-3 Resource center



6 Notes and Constraints

Naming

Item	Description
Build task name	• Letters, digits, underscores (_), and hyphens (-) allowed. • 1 to 115 characters.
Build action name	• Letters, hyphens (-), underscores (_), commas (,), semicolons (;), colons (:), periods (.), slashes (/), parentheses, and spaces allowed. • 1 to 128 characters.
Parameter name	• Letters, digits, and underscores (_) allowed. • 1 to 128 characters.

Specifications

Item	Limit
Size of a file uploaded to **Files**	Max. 100 KB
Number of files that can be uploaded to **Files**	Max. 20
Templates	Max. 5,000 templates per tenant
Custom image size	Max. 5 GB
Build tasks per tenant	Max. 10,000
Parallel executions per tenant	Max. 2

Item	Limit
Build task executions per year	Unlimited
Build actions per task	Max. 50
Parallel executions per task	Max. 2
Duration per build	Max. 4 hours
Retention period of build task execution records	Max. 1 month
Browser type	The following browsers are supported: ● Google Chrome: the latest three versions ● Firefox: the latest three versions ● Edge (default for Windows 10): the latest three versions ● Internet Explorer: no longer supported and tested You are advised to use **Google Chrome** and **Firefox** for better experience.
Resolution	1280 × 1024 or higher is recommended.

7 Concepts

Table 7-1 Basic concepts

Glossary	Definition
Parameter	Values of parameters are specified only during build task execution. The parameters are classified into custom and predefined parameters.
Service endpoint	A service endpoint is an extension to the platform and supports connection to third-party services. For example, CodeArts Build uses service endpoints to connect to Git repositories to obtain project code. You can create, edit, and delete such connections.
Schedule	You can define rules to trigger build tasks automatically. These triggers make compilation and build more flexible and easier.
Build template	A template contains the build environment, sample build commands, and parameters for a specific programming language or compilation framework. You can start a build by simply modifying a template for faster configuration.
Action	Also called a "step". It refers to an automated stage in a compilation process. For example, it can take two steps, **Build with Maven** and **Upload to Release Repos**, to generate a JAR package automatically in software development.
Domain ID	Unique ID generated when a tenant is created.

