



Quick User Guide for the Monitoring Cloud Platform





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1 Software Installation and Uninstallation

1.1 Server Preparation

Before deployment, prepare a cloud server running Windows Server 2012 R2 or later. The minimum recommended server configuration is:

- 2 vCPUs
- 2 GB RAM

Configure firewall and security group rules to allow the following TCP ports:

- 8882 — Business Service Port
- 443 — HTTPS Service Port
- 8883 / 8884 — NTRIP Service Ports

1.1.1 Python Runtime Installation

(1) The installation path must not contain spaces or non-ASCII characters. Run `python-3.10.5-amd64.exe` to install the Python runtime, as shown in Figure 1-1.

Name	Date Modified	Type	Size
odb-boost-2.5.0-b.21.dll	12/6/2021 16:07	Application extension	14 KB
odb-mssql-2.5.0-b.19.dll	6/7/2021 15:07	Application extension	221 KB
odb-mssql-2.5.0-b.21.dll	12/6/2021 16:07	Application extension	222 KB
odb-mysql-2.5.0-b.21.dll	12/6/2021 16:07	Application extension	188 KB
odb-qt-2.5.0-b.19.dll	6/7/2021 15:07	Application extension	13 KB
odb-qt-2.5.0-b.21.dll	12/6/2021 16:07	Application extension	13 KB
odb-sqlite-2.5.0-b.19.dll	6/7/2021 15:07	Application extension	185 KB
odb-sqlite-2.5.0-b.21.dll	12/6/2021 16:07	Application extension	203 KB
opengl32sw.dll	6/14/2016 20:00	Application extension	20,433 KB
python-3.10.5-amd64.exe	9/8/2022 14:49	Application	27,967 KB
Qt5Core.dll	5/10/2021 19:41	Application extension	6,049 KB
Qt5Gui.dll	3/27/2020 21:18	Application extension	6,963 KB
Qt5Mqtt.dll	5/23/2022 9:35	Application extension	181 KB
Qt5Network.dll	5/10/2021 19:41	Application extension	1,350 KB
Qt5Sql.dll	5/10/2021 19:41	Application extension	208 KB
Qt5Svg.dll	3/28/2020 2:41	Application extension	330 KB
Qt5Widgets.dll	3/27/2020 21:18	Application extension	5,466 KB
Qt5Xml.dll	3/27/2020 21:18	Application extension	191 KB
Qt5XmlPatterns.dll	3/28/2020 4:15	Application extension	2,818 KB
router.exe	7/27/2021 8:48	Application	105 KB
sqlite3-1.dll	12/6/2021 16:07	Application extension	1,327 KB
ssl-1.1.dll	12/6/2021 16:07	Application extension	478 KB
ssleay32.dll	5/10/2021 19:41	Application extension	353 KB
update_cp.exe	7/16/2021 11:51	Application	376 KB
vcruntime140.dll	5/10/2021 19:41	Application extension	94 KB
vcruntime140_1.dll	5/10/2021 19:41	Application extension	36 KB
WebServer.exe	8/17/2022 19:10	Application	3,926 KB
z-1.dll	12/6/2021 16:07	Application extension	83 KB
zip.dll	5/10/2021 19:41	Application extension	281 KB

Figure 1-1



- (2) The Python installation dialog box will appear. Select "Add Python 3.10 to PATH", then click "Install Now" to begin the installation, as shown in Figure 1-2 and Figure 1-3.



Figure 1-2

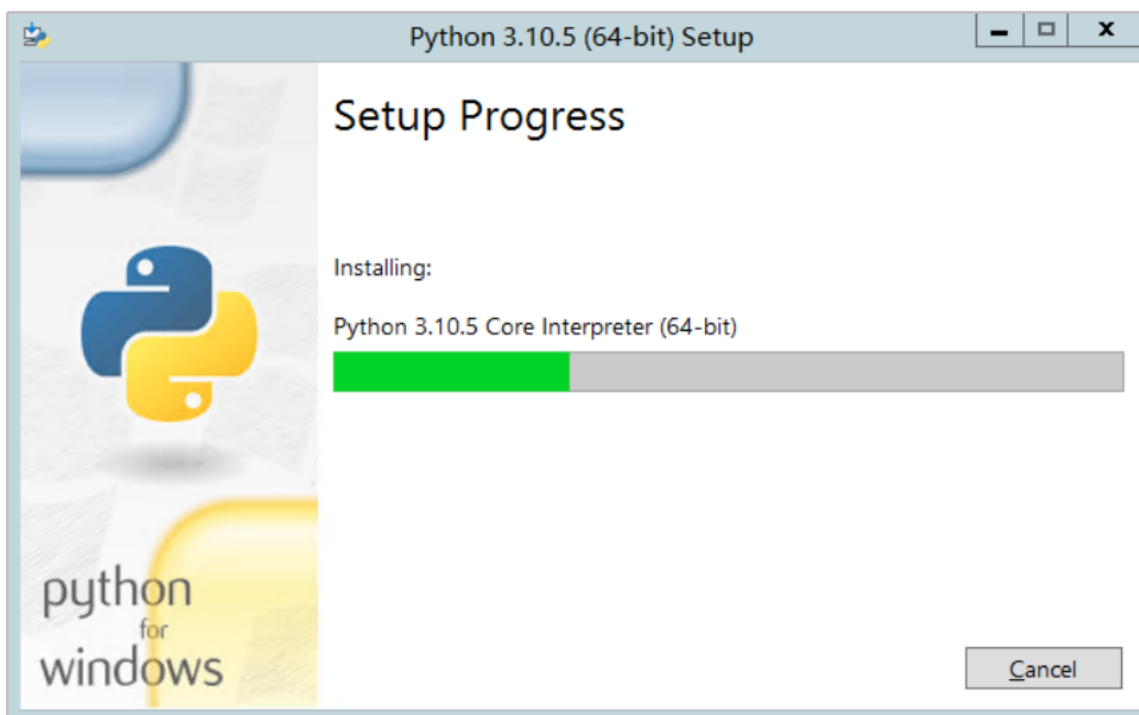


Figure 1-3



- (3) Wait until the message "Setup was successful" is displayed, indicating that the installation has completed successfully, as shown in Figure 1-4.

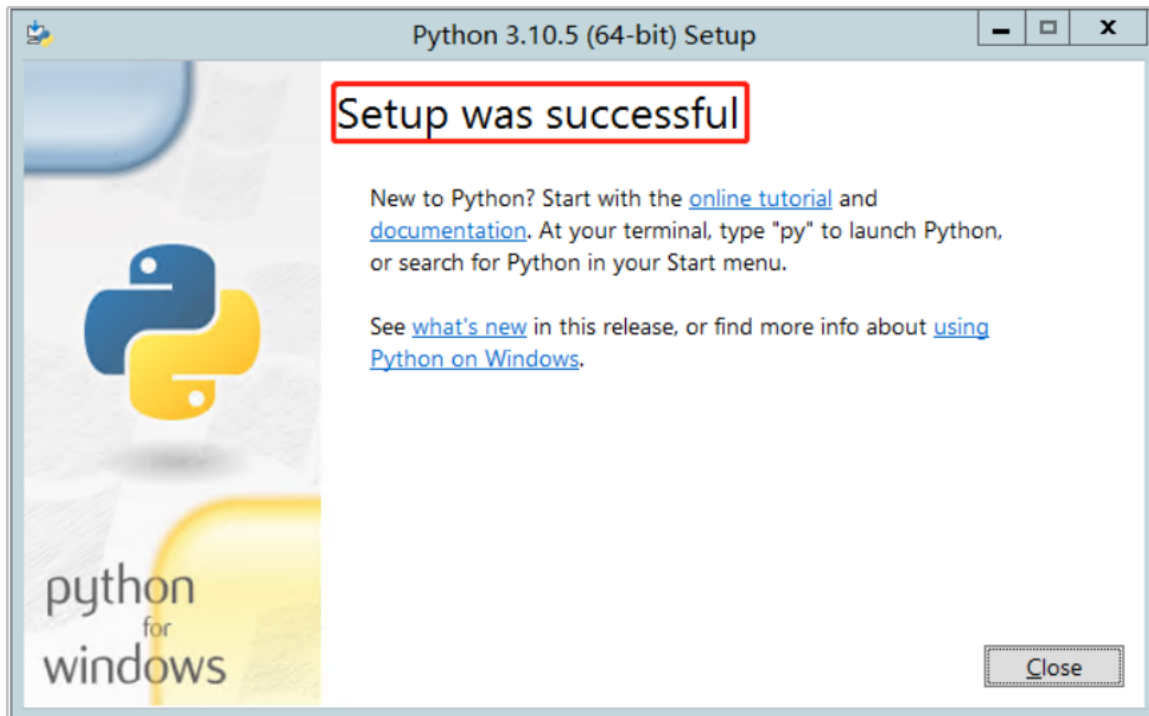


Figure 1-4

- (4) After the installation is complete, restart the server.

1.1.2 Installation of the Python "requests" Package

- (1) Open the Command Prompt, enter "pip install requests", and press Enter to install the package, as shown in Figure 1-5 and Figure 1-6. An Internet connection is required during the installation process.

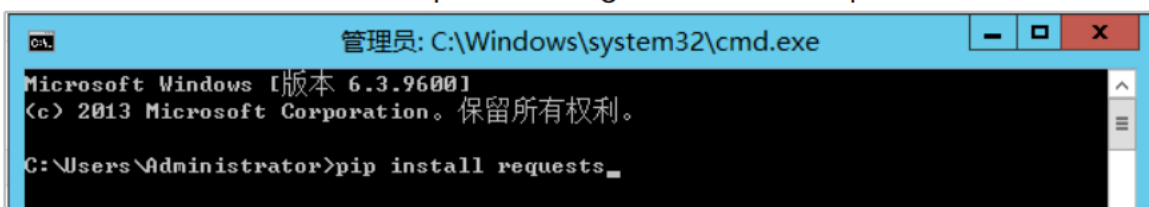


Figure 1-5



Figure 1-6



- (2) After the installation is complete, the interface shown in Figure 1-7 will be displayed.

```
管理员: C:\Windows\system32\cmd.exe
C:\Users\Administrator>pip install requests
Collecting requests
  Downloading requests-2.28.1-py3-none-any.whl (62 kB)
----- 62.8/62.8 KB 10.7 kB/s eta 0:00:00
Collecting charset-normalizer<3,>=2
  Downloading charset_normalizer-2.1.1-py3-none-any.whl (39 kB)
Collecting certifi>=2017.4.17
  Downloading certifi-2022.6.15-py3-none-any.whl (160 kB)
----- 160.2/160.2 KB 4.7 kB/s eta 0:00:00
Collecting urllib3<1.27,>=1.21.1
  Downloading urllib3-1.26.12-py2.py3-none-any.whl (140 kB)
----- 140.4/140.4 KB 12.4 kB/s eta 0:00:00
Collecting idna<4,>=2.5
  Downloading idna-3.3-py3-none-any.whl (61 kB)
----- 61.2/61.2 KB 8.4 kB/s eta 0:00:00
Installing collected packages: urllib3, idna, charset-normalizer, certifi, requests
Successfully installed certifi-2022.6.15 charset-normalizer-2.1.1 idna-3.3 requests-2.28.1 urllib3-1.26.12
WARNING: You are using pip version 22.0.4; however, version 22.2.2 is available.
You should consider upgrading via the 'C:\Users\Administrator\AppData\Local\Programs\Python\Python310\python.exe -m pip install --upgrade pip' command.
C:\Users\Administrator>
```

Figure 1-7

If the local server does not have Internet access, download the "requests-2.31.0-py3-none-any.whl" file and install it manually.

Please follow the steps below:

- ① On a computer that has Internet access, open a web browser and go to the following link:
<https://pypi.org/project/requests/2.31.0/#files>
Download the requests-2.31.0-py3-none-any.whl file.
- ② Copy the downloaded file to the offline server.
- ③ Open the Command Prompt, navigate to the directory where the file is located, and run the following command to install:

```
pip install requests-2.31.0-py3-none-any.whl
```
- ④ After the installation is complete, the package will be ready to use.




Figure 1-8



1.2 SQL2017 Installation

- (1) Download the SQL Server 2017 installation image and the executable files listed below to the engineer's workstation. Six installation files are required for the SQL Server 2017 deployment, as shown below:

Name	Date modified	Type	Size
clearcompressionflag.exe	11/19/2019 5:26 PM	Application	38 KB
en_sql_server_2017_developer_x64_dvd_1...	12/2/2022 5:58 PM	Disc Image File	1,510,004 KB
jdk-8u212-windows-x64.exe	10/18/2019 3:27 PM	Application	220,428 KB
python-3.10.5-amd64.exe	3/18/2024 8:55 AM	Application	27,967 KB
SSMS-Setup-ENU.exe	12/5/2022 4:20 PM	Application	693,047 KB
Windows8.1-KB2919355-x64.msu	11/19/2019 5:28 PM	Microsoft Update ...	707,363 KB
Windows8.1-KB2919442-x64.msu	11/19/2019 5:25 PM	Microsoft Update ...	10,466 KB

Figure 1-9

Disclaimer: The download links used in this document are provided for installation demonstration purposes only. Customers should obtain valid licensed software directly from Microsoft before deployment. No responsibility is assumed for any copyright, licensing, or intellectual property issues related to third-party download sources.

- (2) Copy the SQL2017 installation image to the **E:** or **F:** drive of the server and extract the files. Do not place the installation package on the **D:** drive, as this drive is reserved for the default platform deployment environment.

Before installing SQL Server 2017, install the following executable packages in the order listed below:

1. jdk-8u212-windows-x64.exe
2. Windows8.1-KB2919442-x64.msu (optional)
3. clearcompressionflag.exe (optional)
4. Windows8.1-KB2919355-x64.msu (optional)



1.2.1 Installing "jdk-8u212-windows-x64.exe"

(1) Double-click "jdk-8u212-windows-x64.exe" to start the installation.

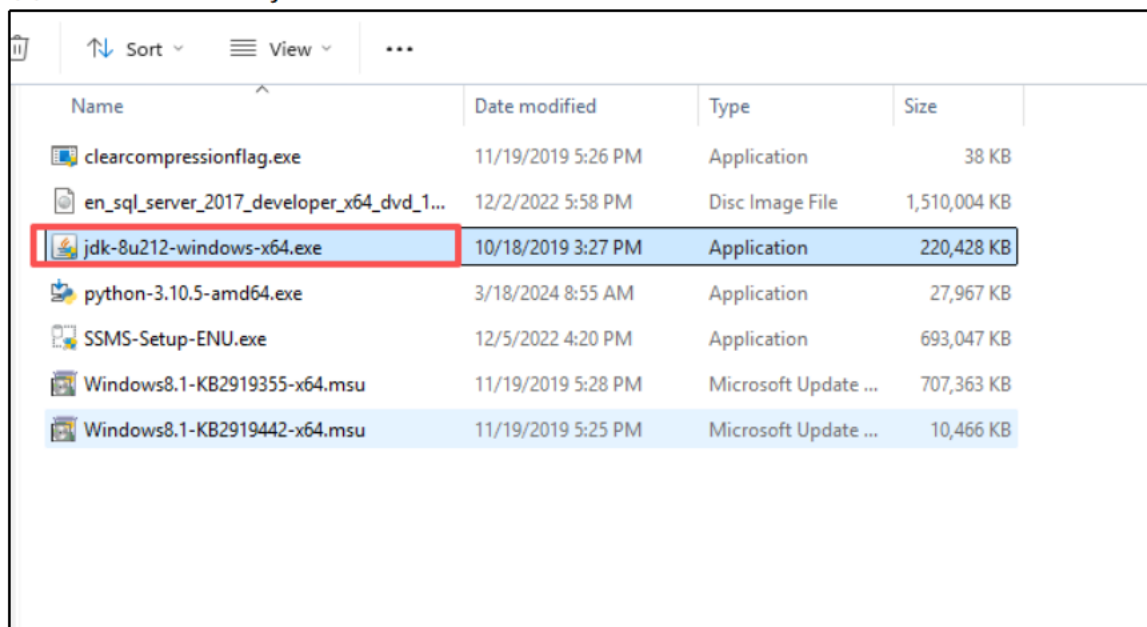


Figure 1-10

(2) Click Next.

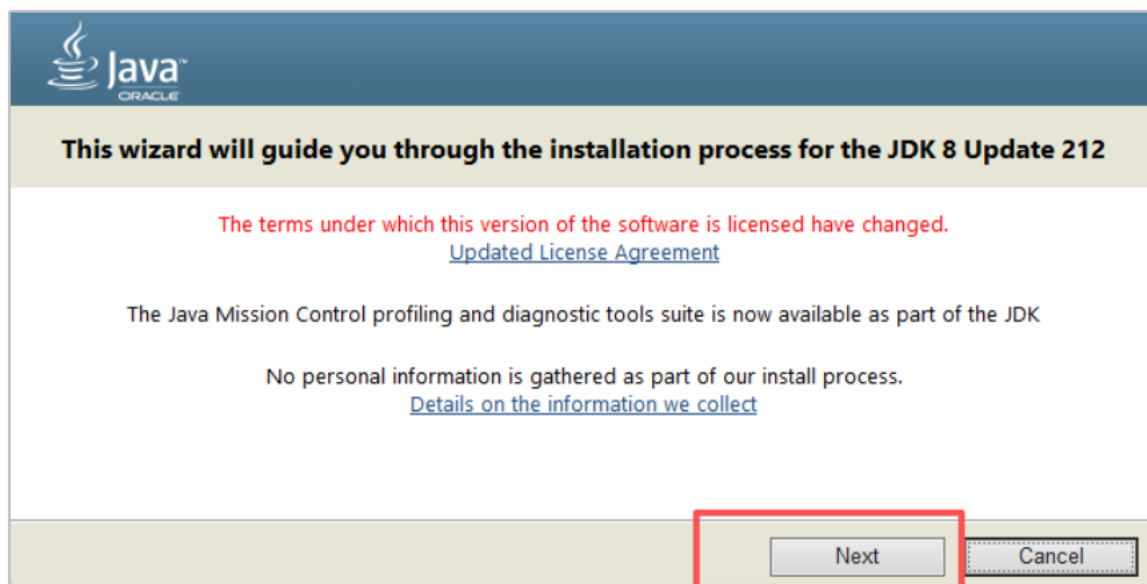


Figure 1-11



(3) Click Next.

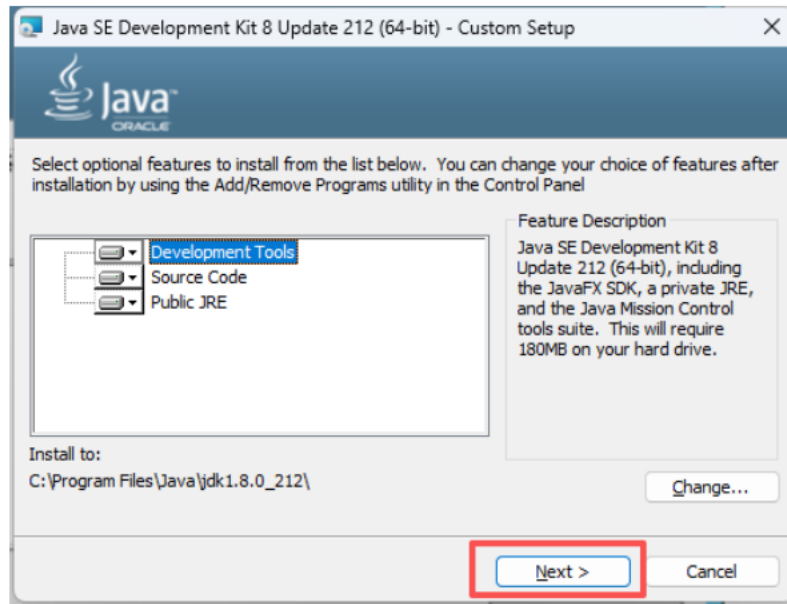


Figure 1-12

(4) Click Next.

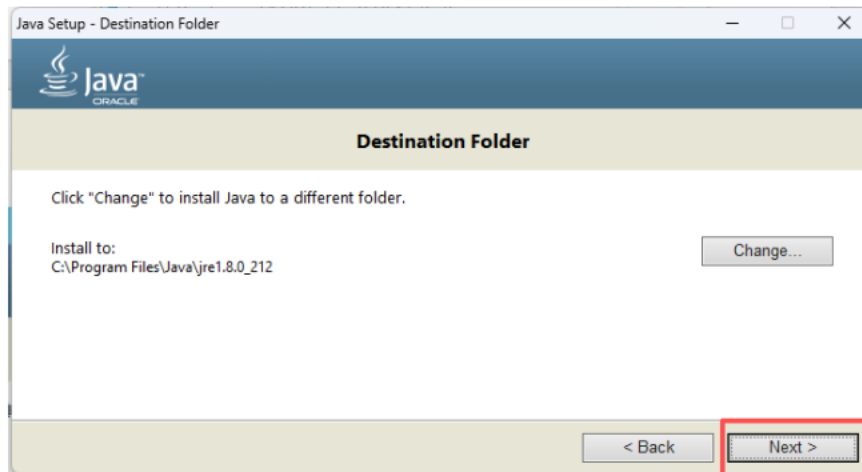


Figure 1-13



Figure 1-14



(5) After the installation is complete, click Close.

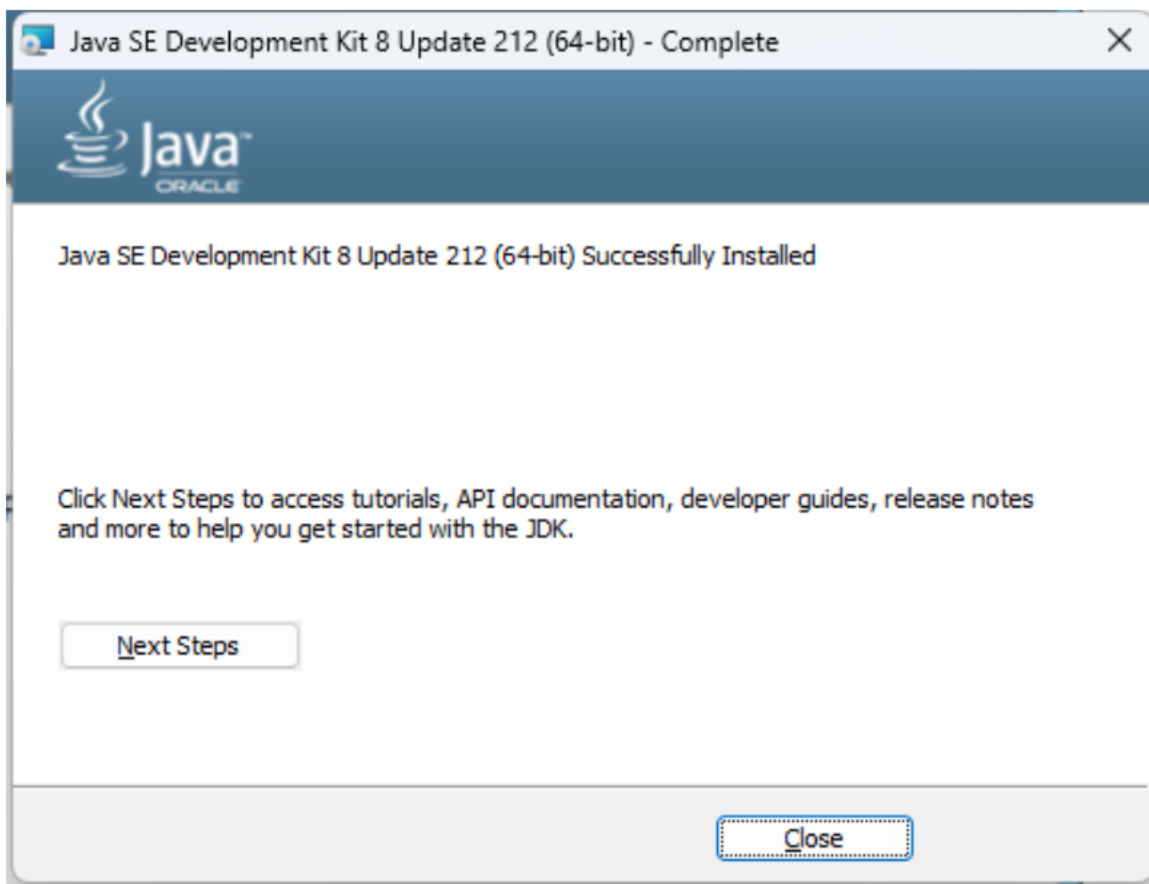


Figure 1-15

1.2.2 Installing SQL Server 2017

(1) Mount the "cn_sql_server_2017_developer_x64_dvd_11296175.iso" image file.

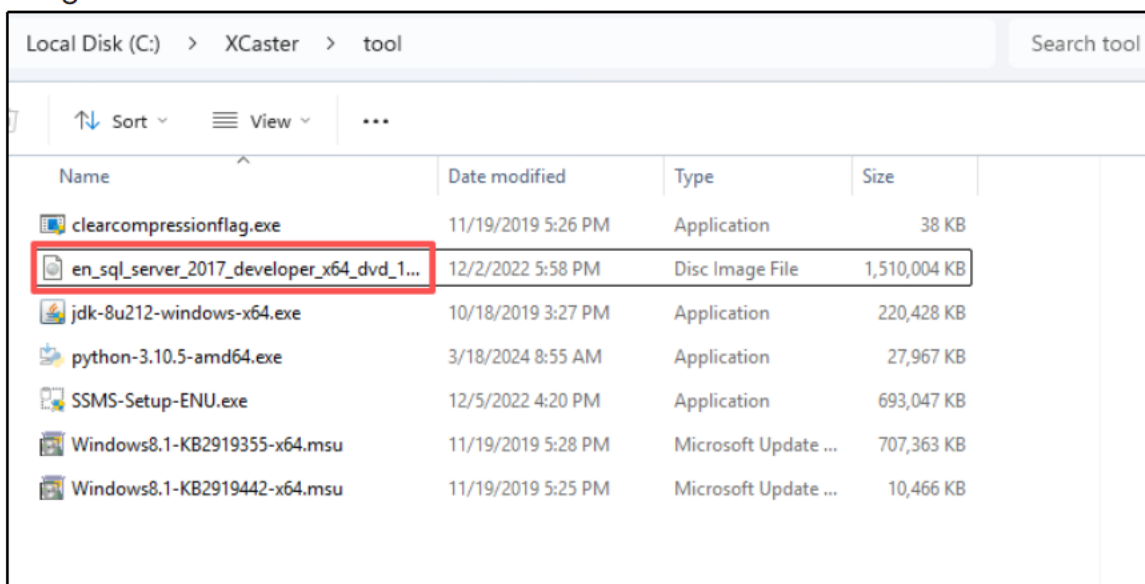


Figure 1-16



(2) Open the mounted folder.

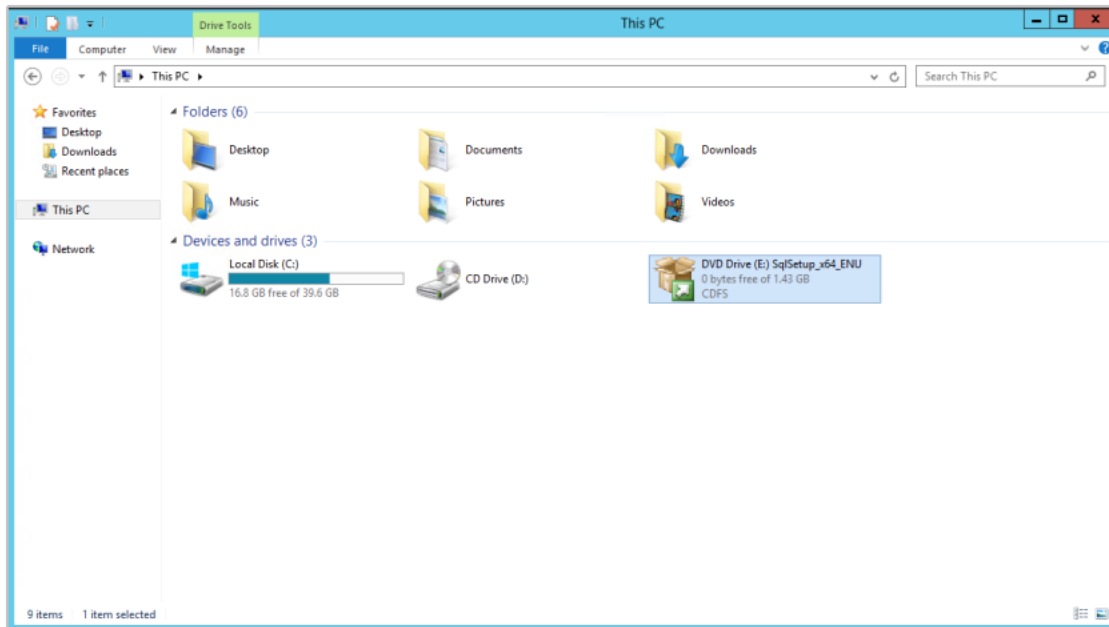


Figure 1-17

(3) Double-click the "setup" application to start the installation.

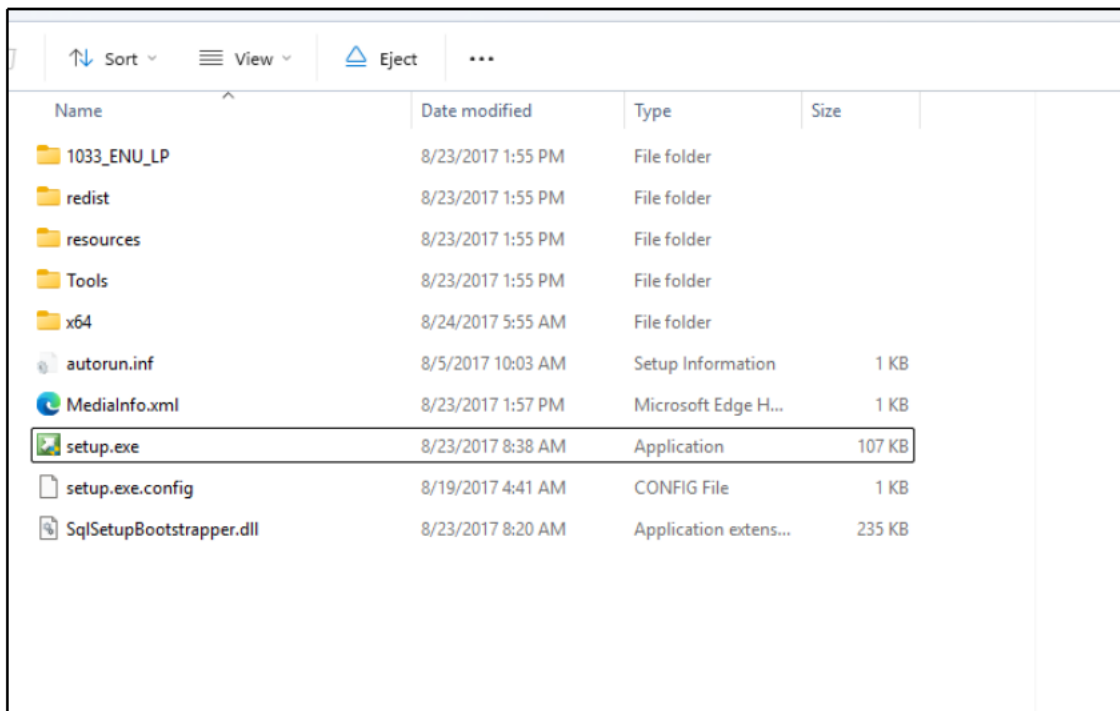


Figure 1-18



(4) Select "New SQL Server stand-alone installation".

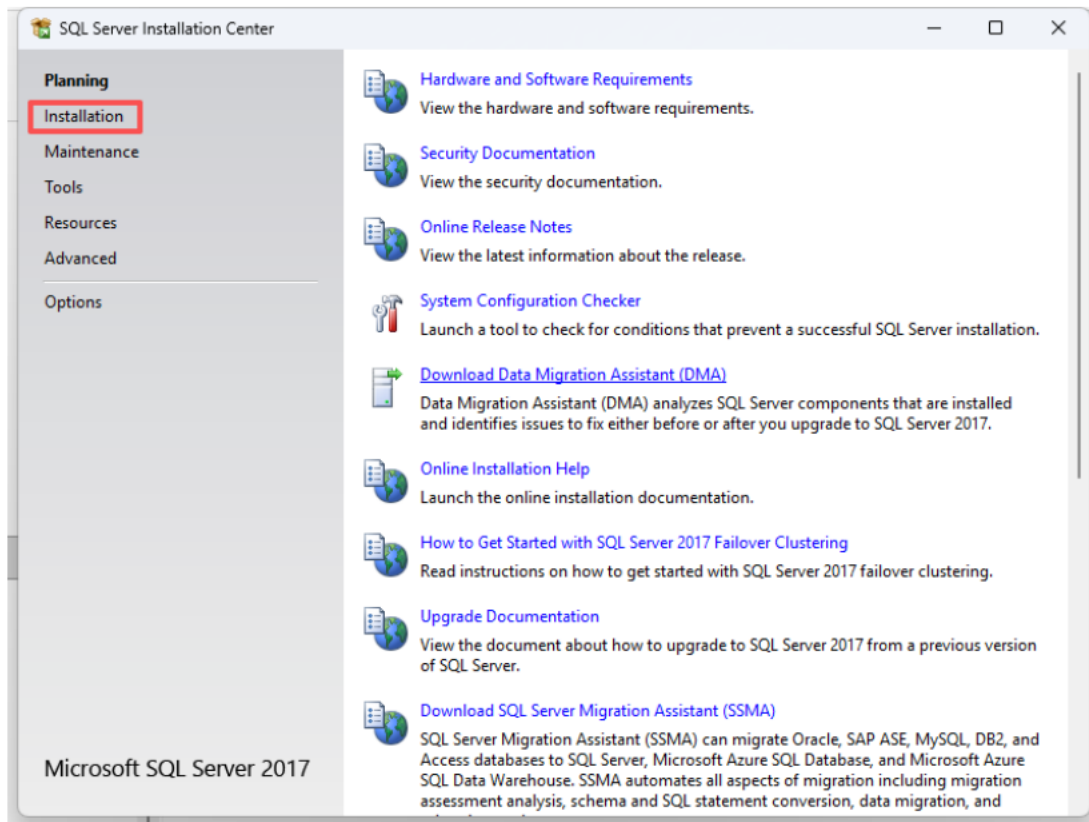


Figure 1-19



Figure 1-20



(5) Enter a product key or select "Specify a free edition", then choose "Developer" edition. In this example, the Developer edition is selected.

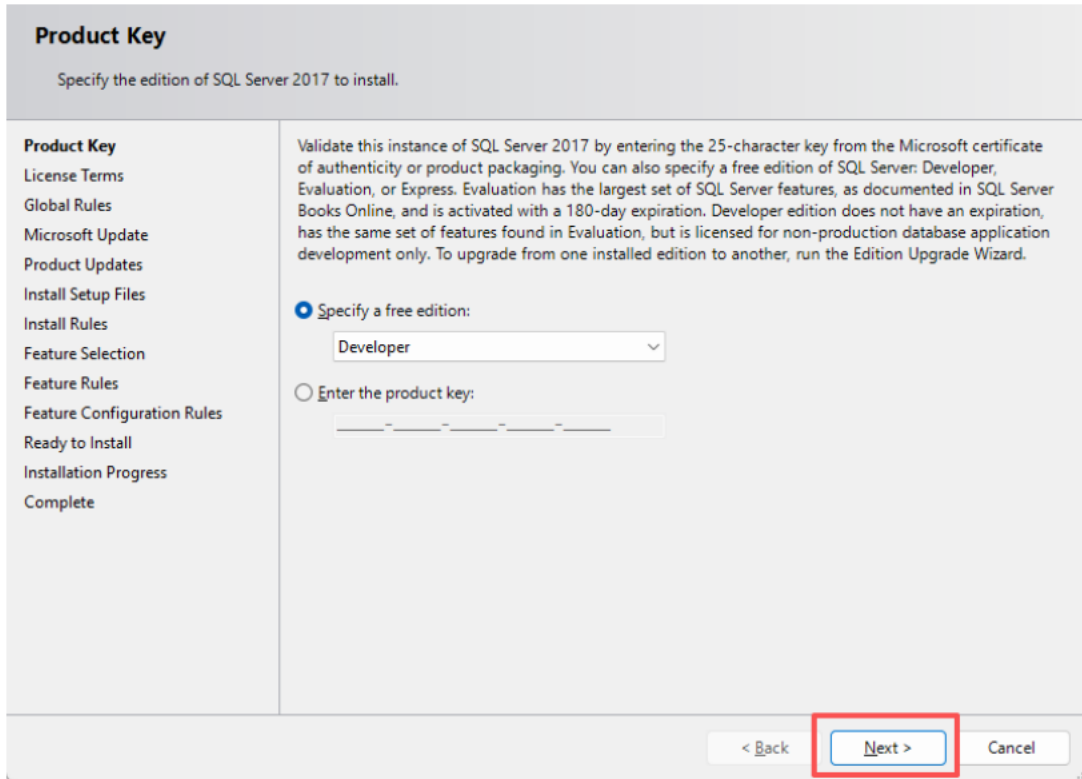


Figure 1-21

(6) Accept the license terms and click "Next".

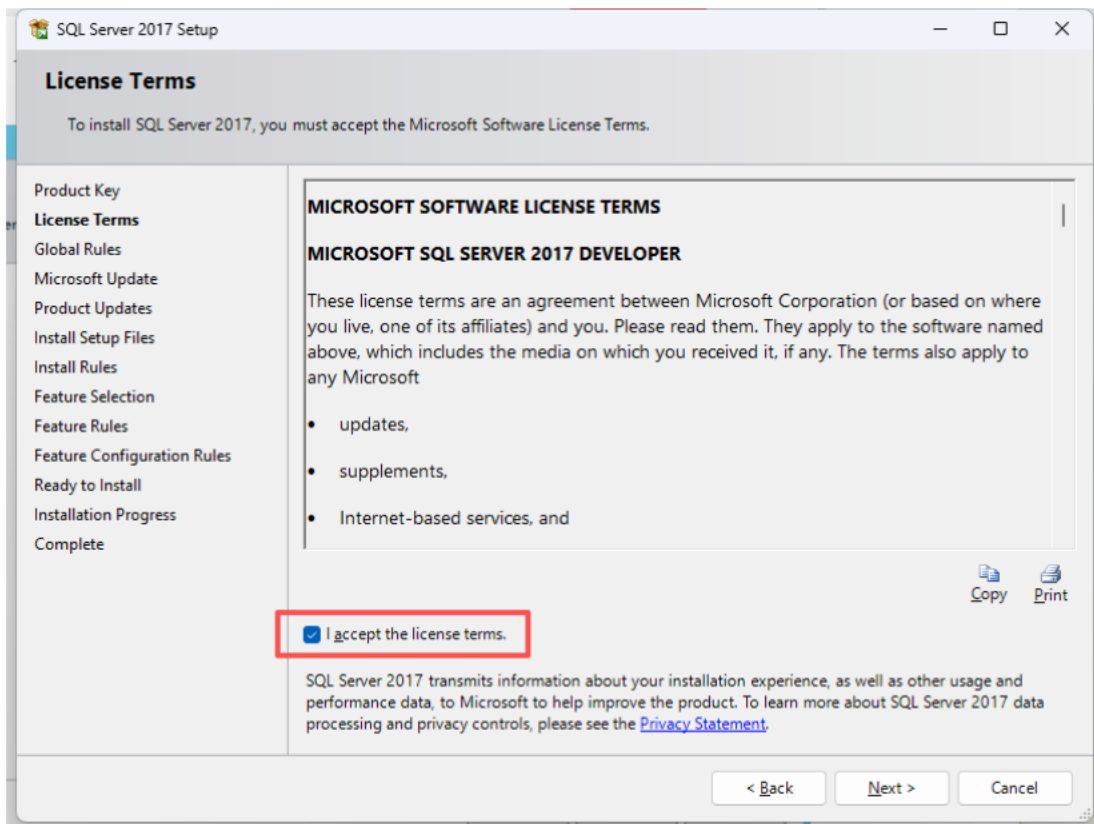


Figure 1-22



(7) Click "Next".

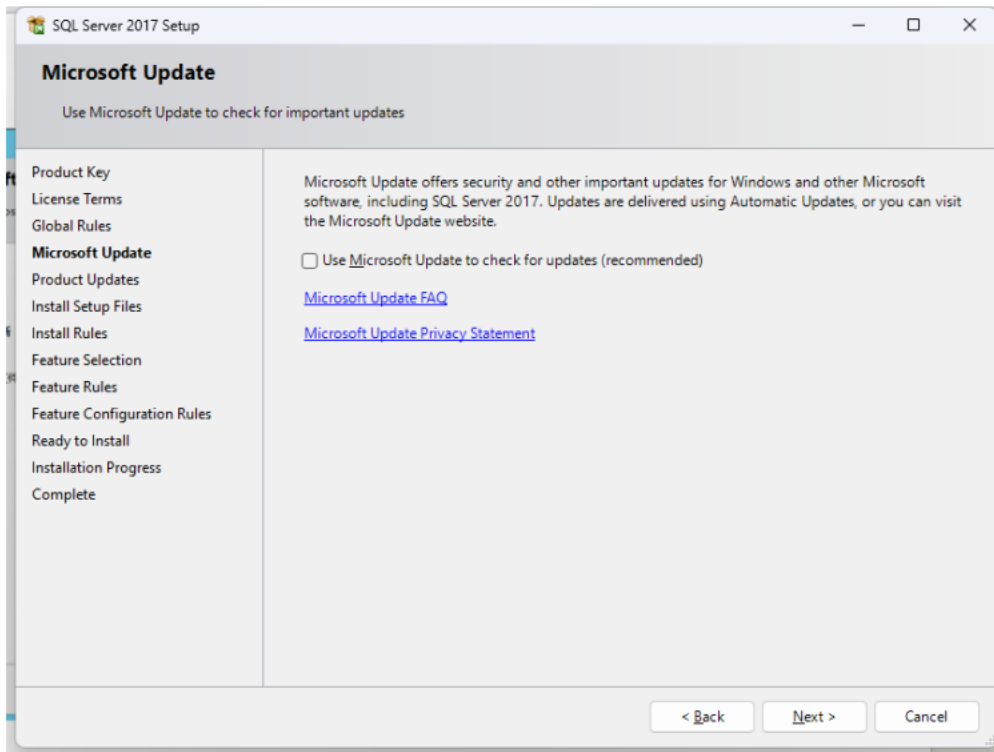


Figure 1-23

(8) Clear "Check for product updates", then click "Next".

(9) Click "Next".

(10) Complete the installation rule check, then click "Next".

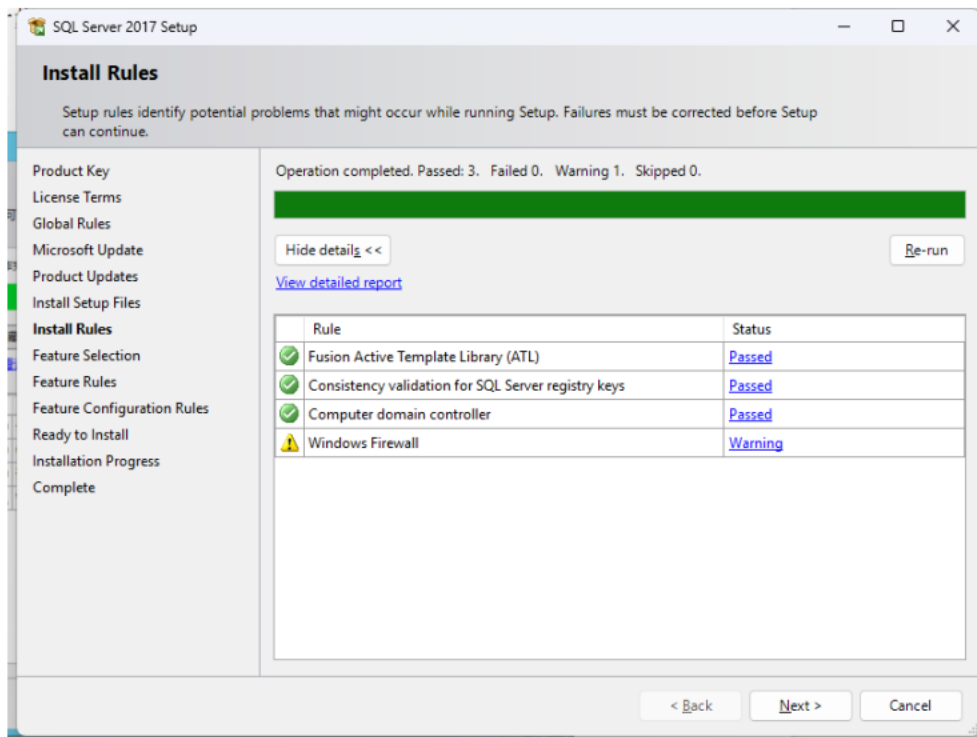


Figure 1-24



(11) In the feature selection page, select all features first, then clear the options shown in the figure below, and click "Next".

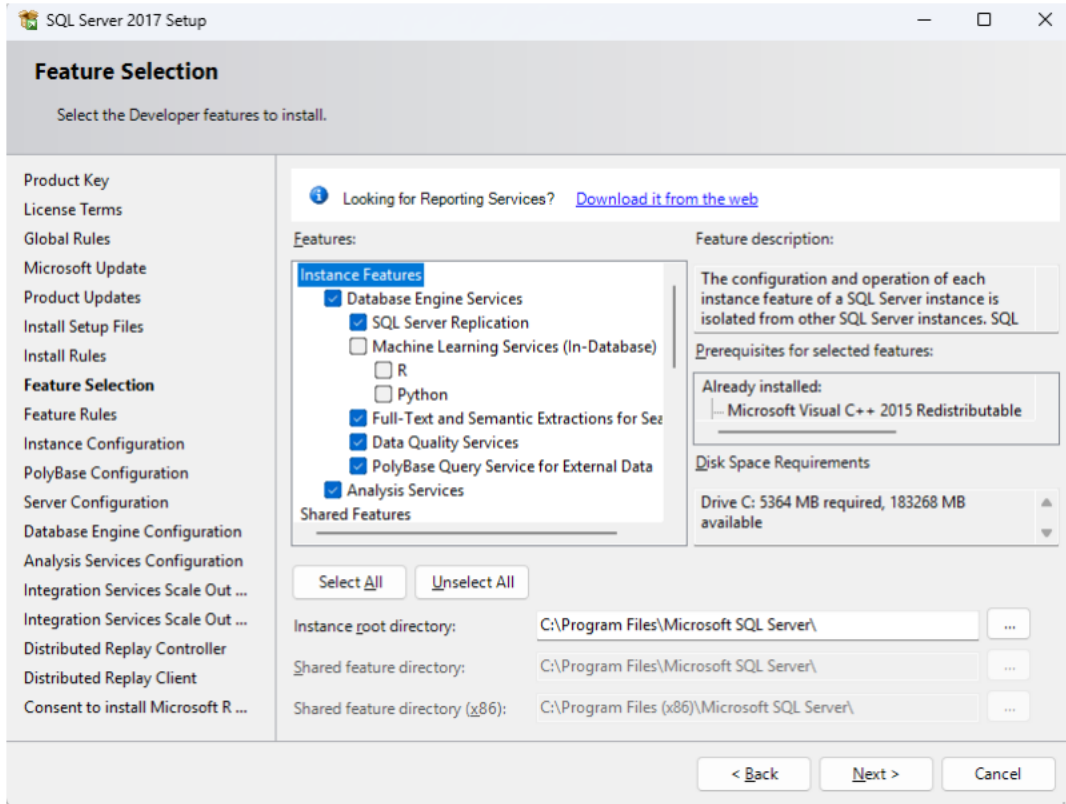


Figure 1-25

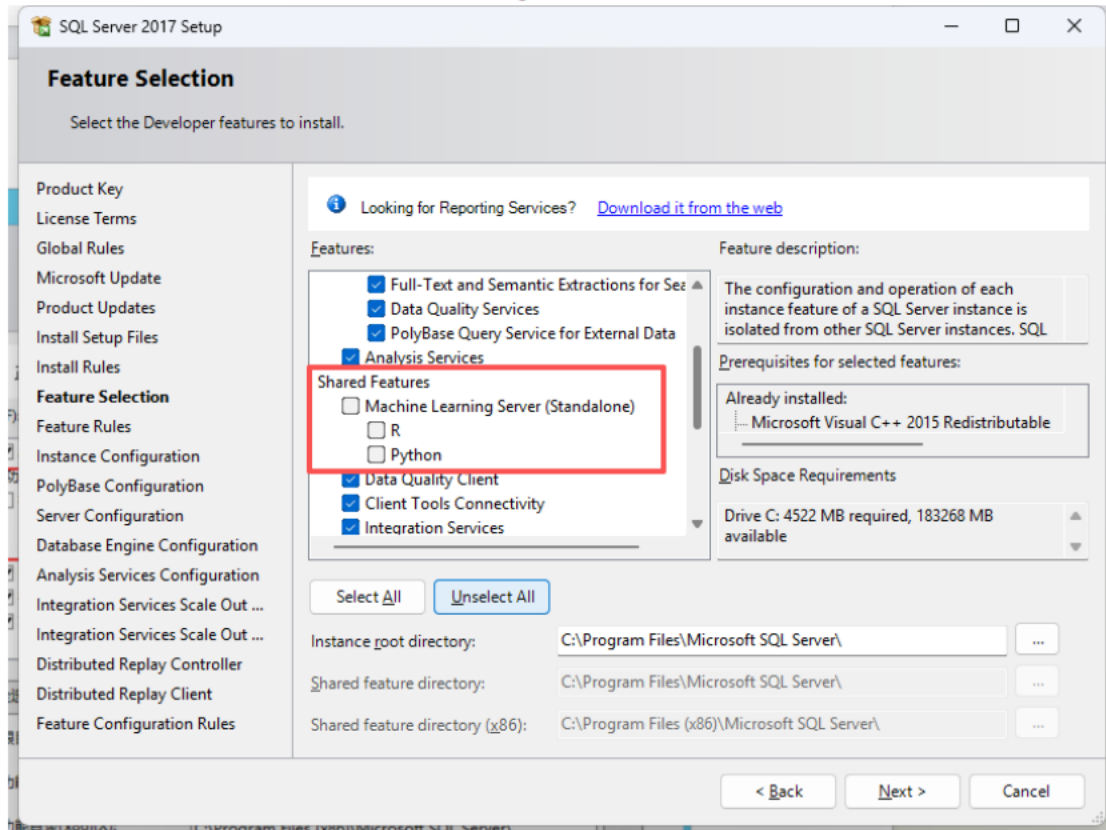


Figure 1-26



(12) Click "Next".

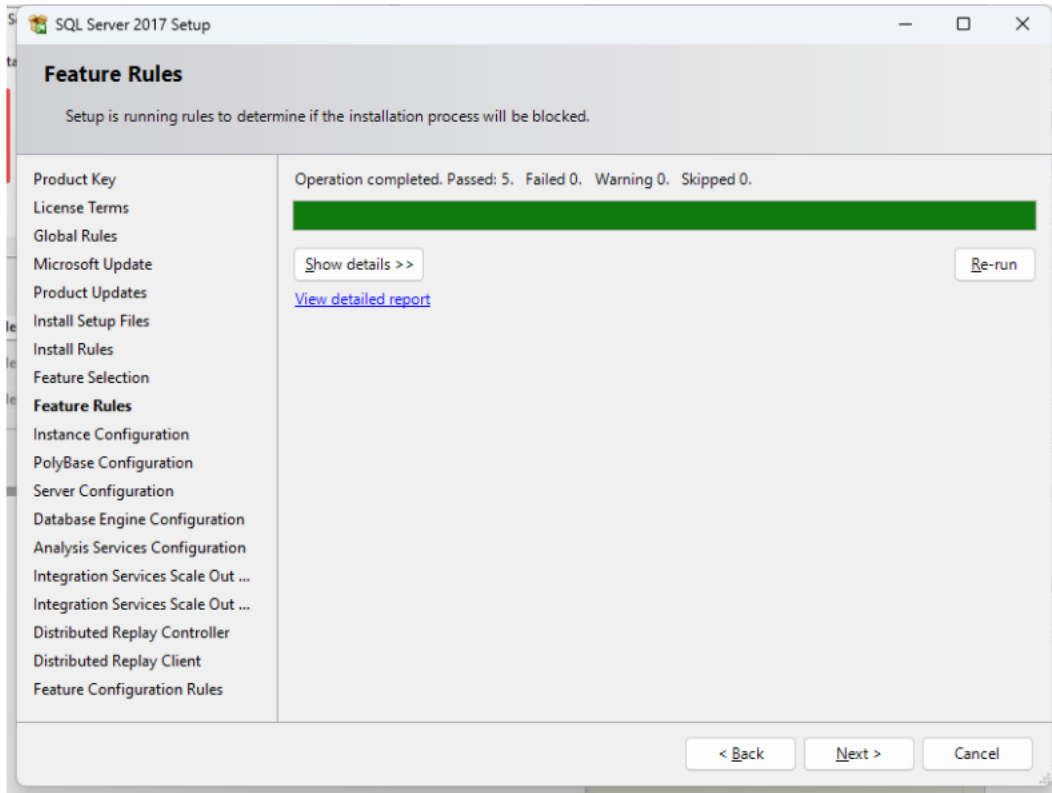


Figure 1-27

(13) Click "Next".

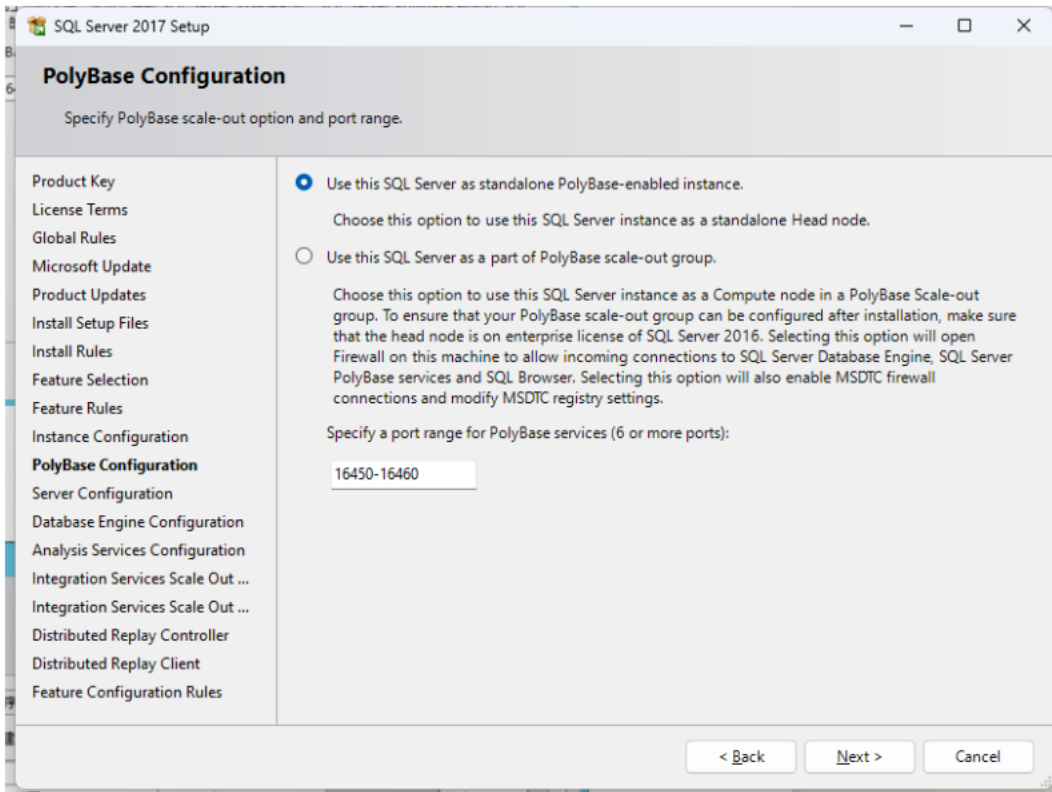


Figure 1-28



(14) Set all services to "Automatic", then click "Next".

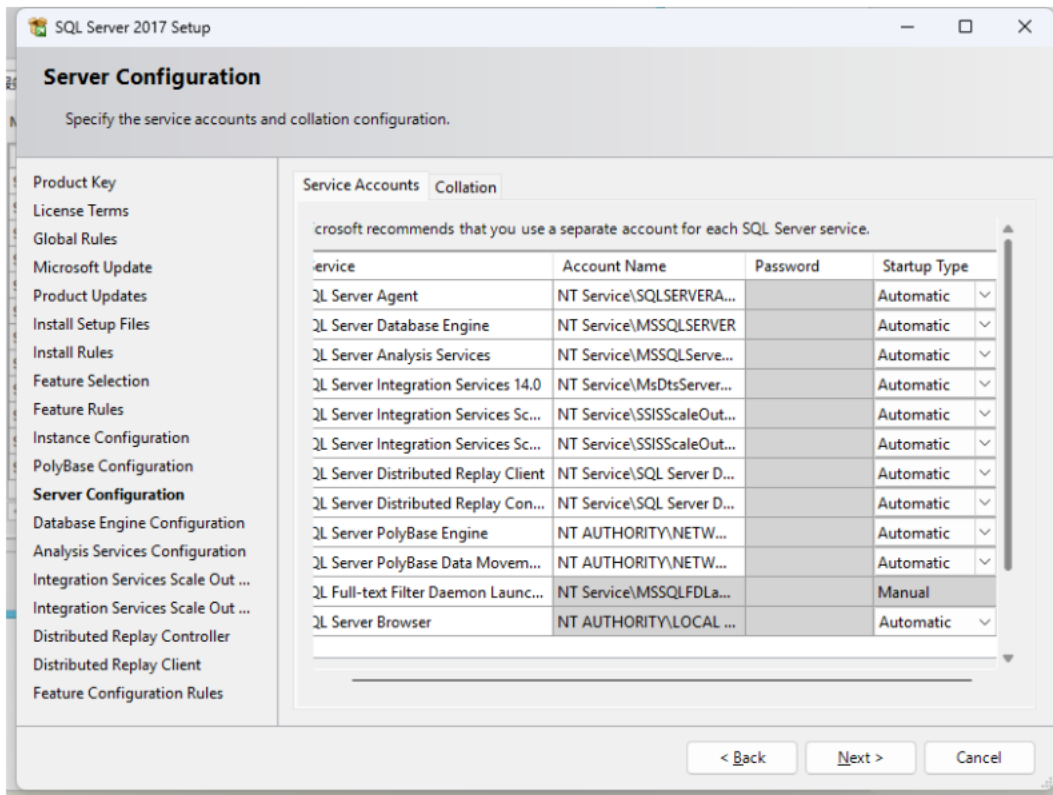


Figure 1-29

(15) Select "Windows authentication mode", "add the current user", and click "Next".

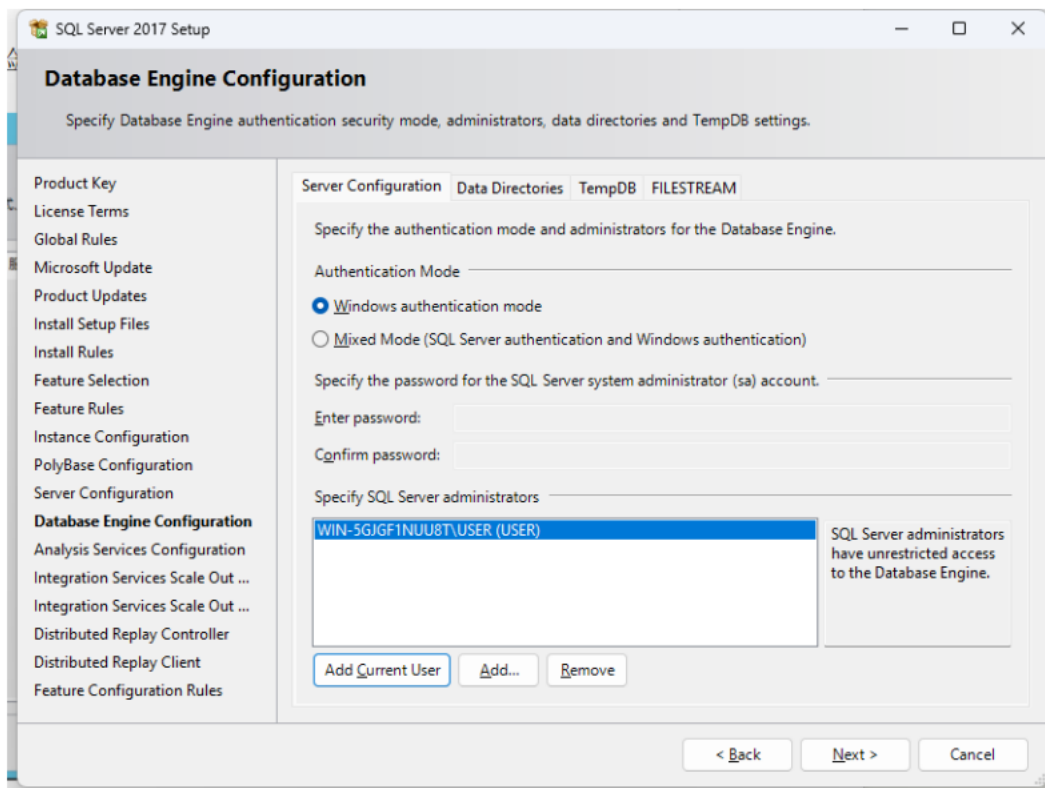


Figure 1-30



(16) Select "Tabular Mode", "add the current user", and click "Next".

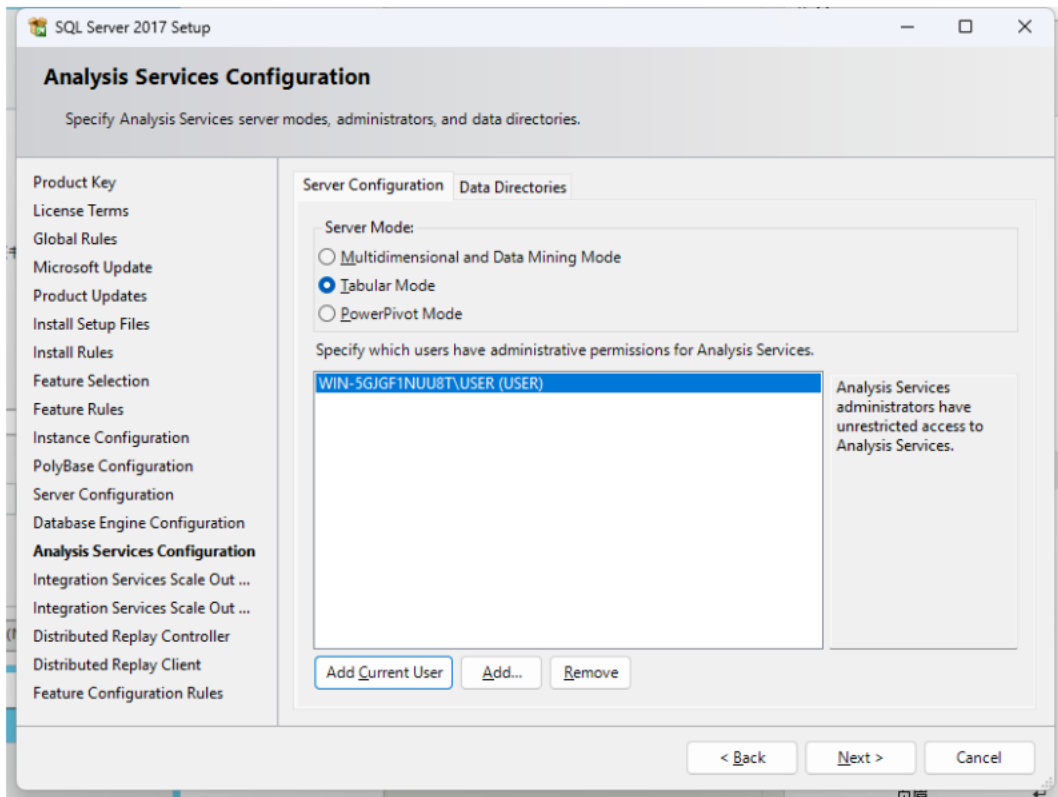


Figure1-31

(17) Click "Next".

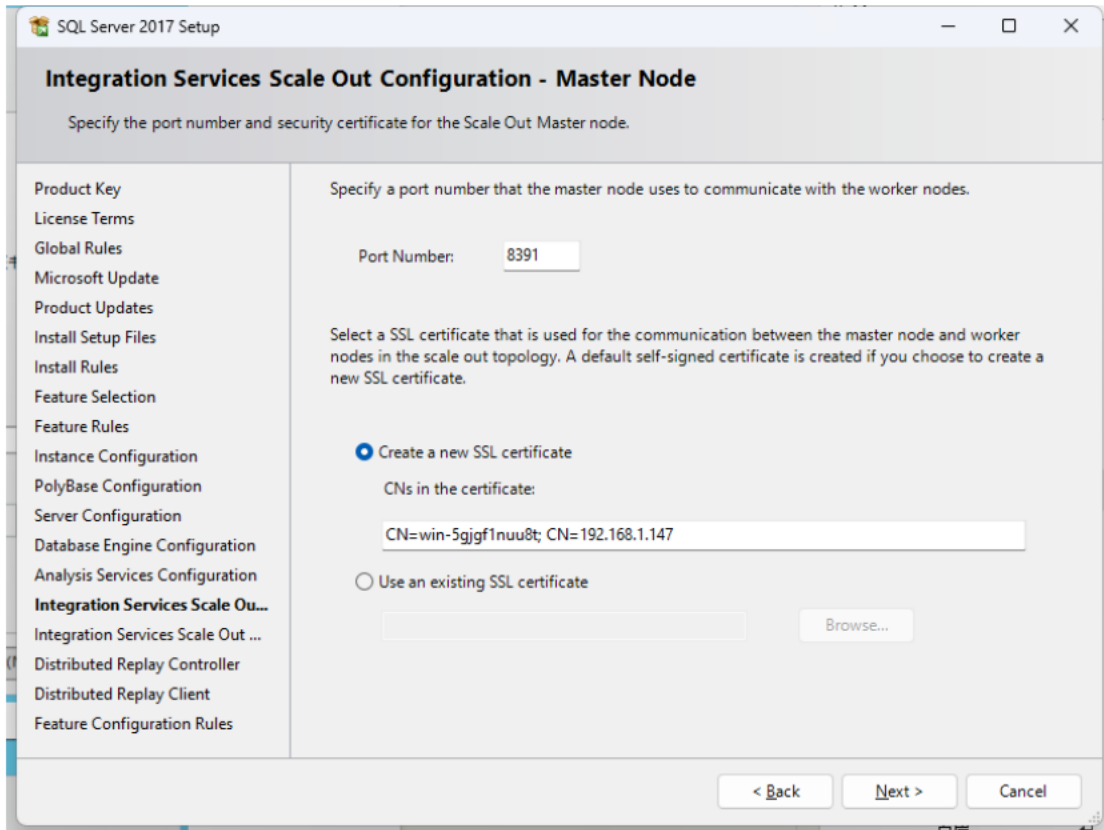


Figure 1-32

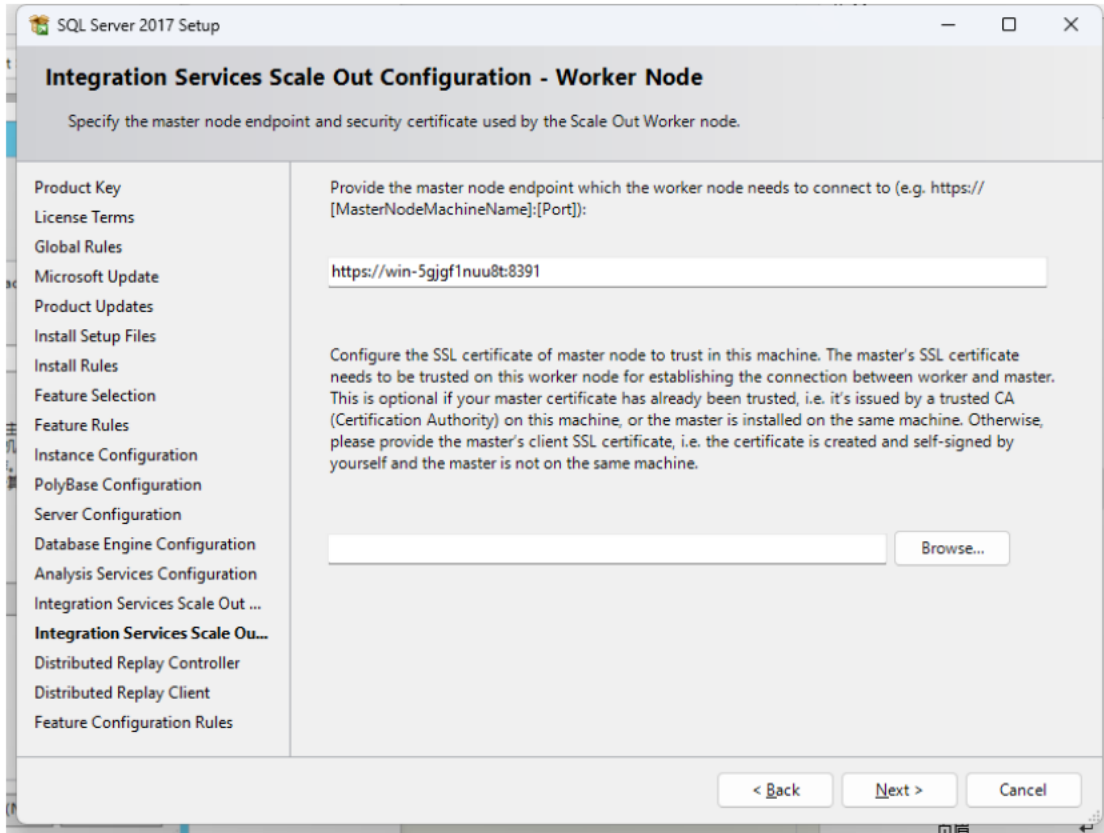


Figure 1-33

(18) Select "Add Current User", then click "Next".

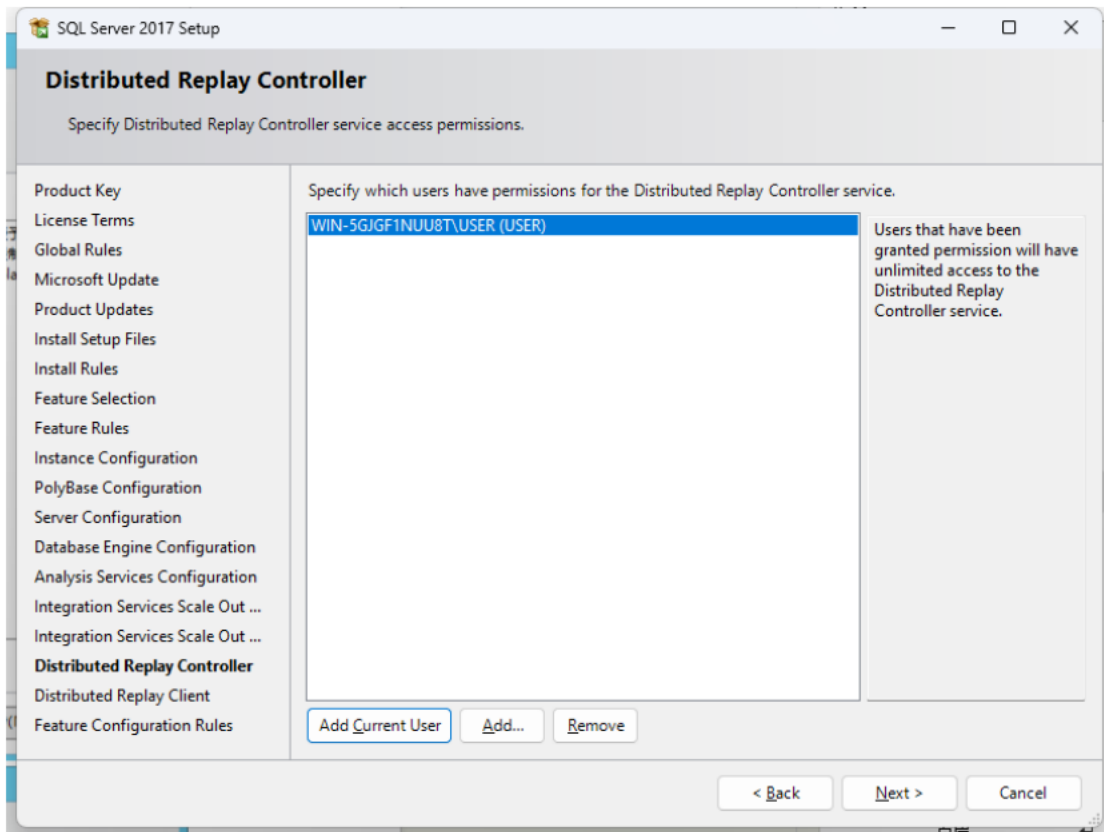


Figure 1-34

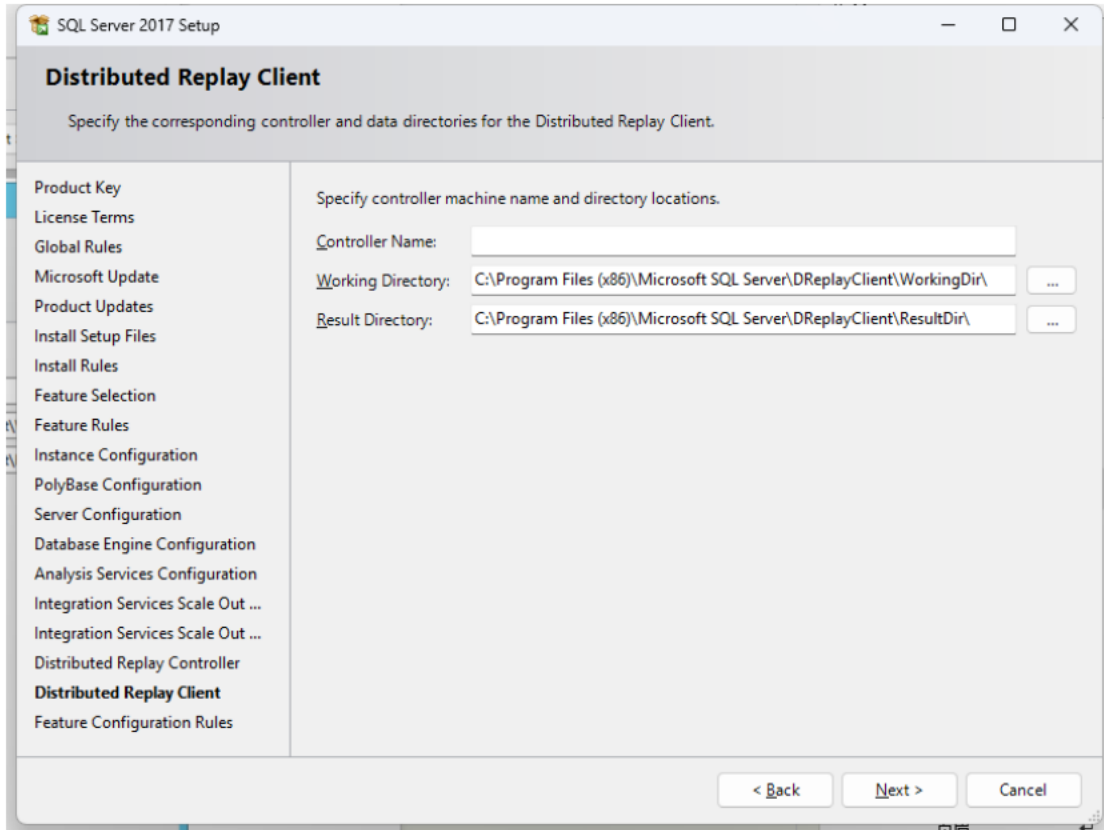


Figure 1-35

(19) Click "Install" to begin the installation.

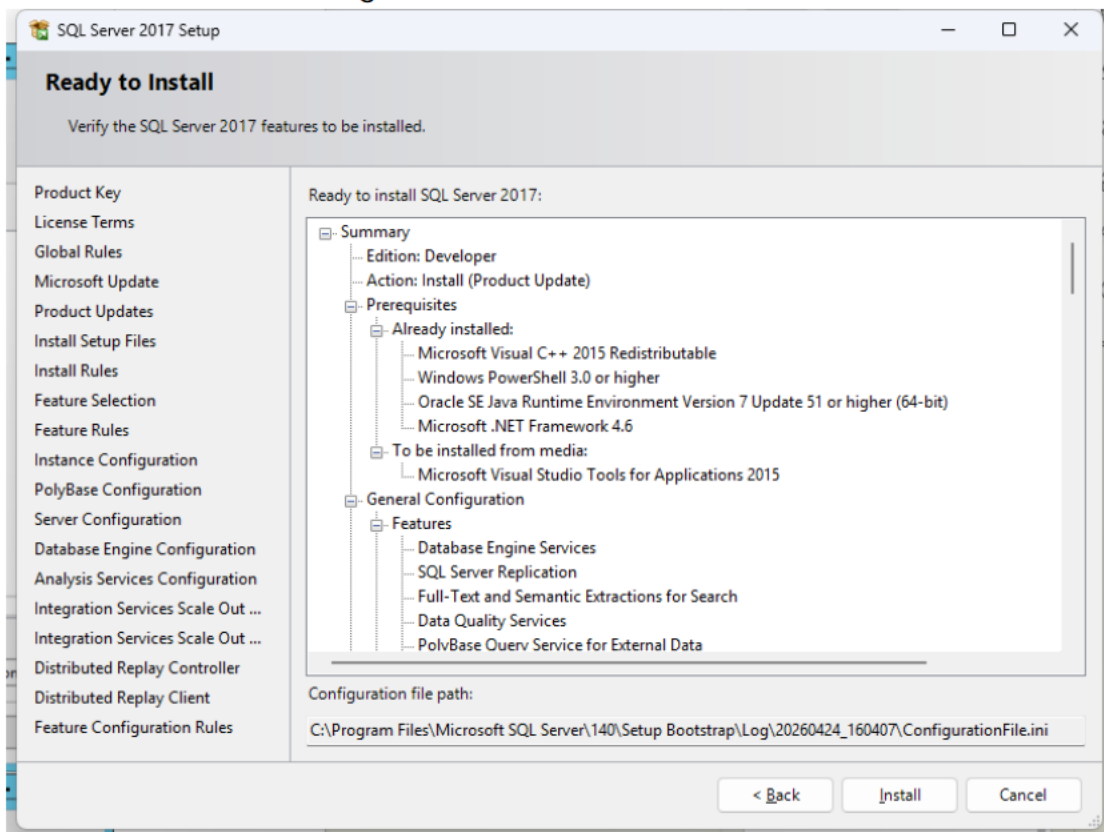


Figure 1-36

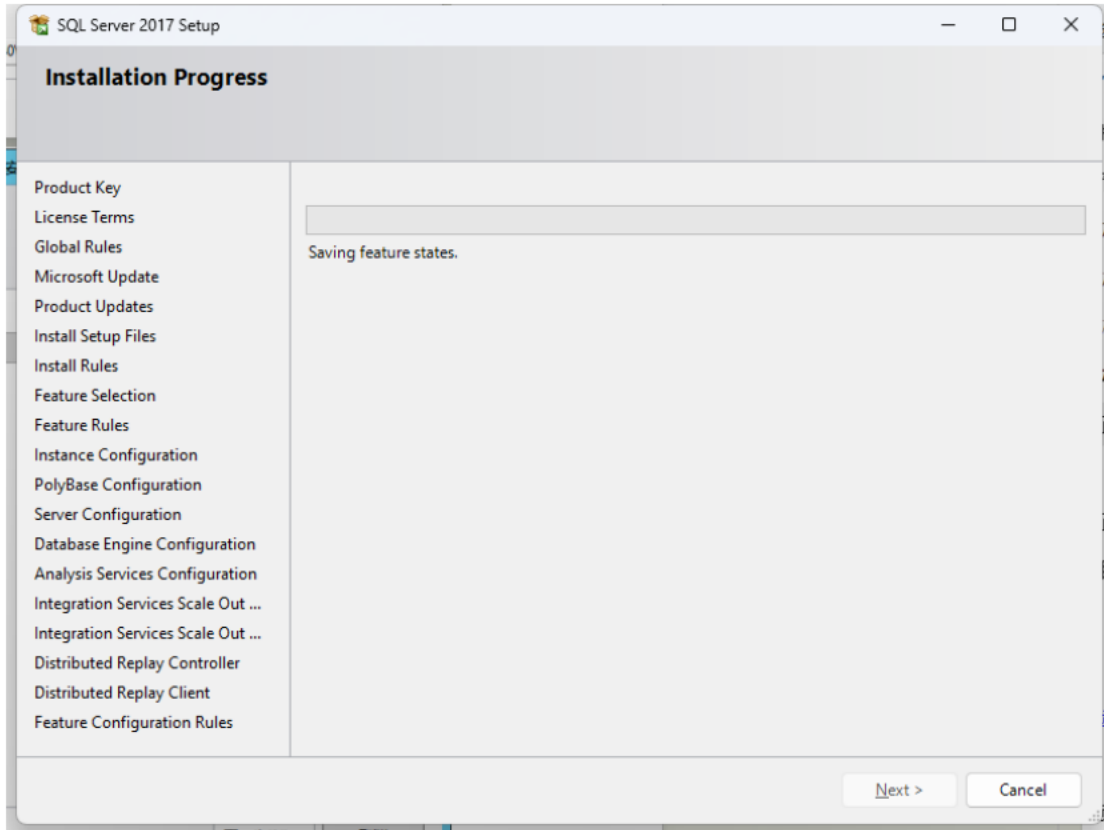


Figure 1-37

(20) After the installation is complete, restart the computer.

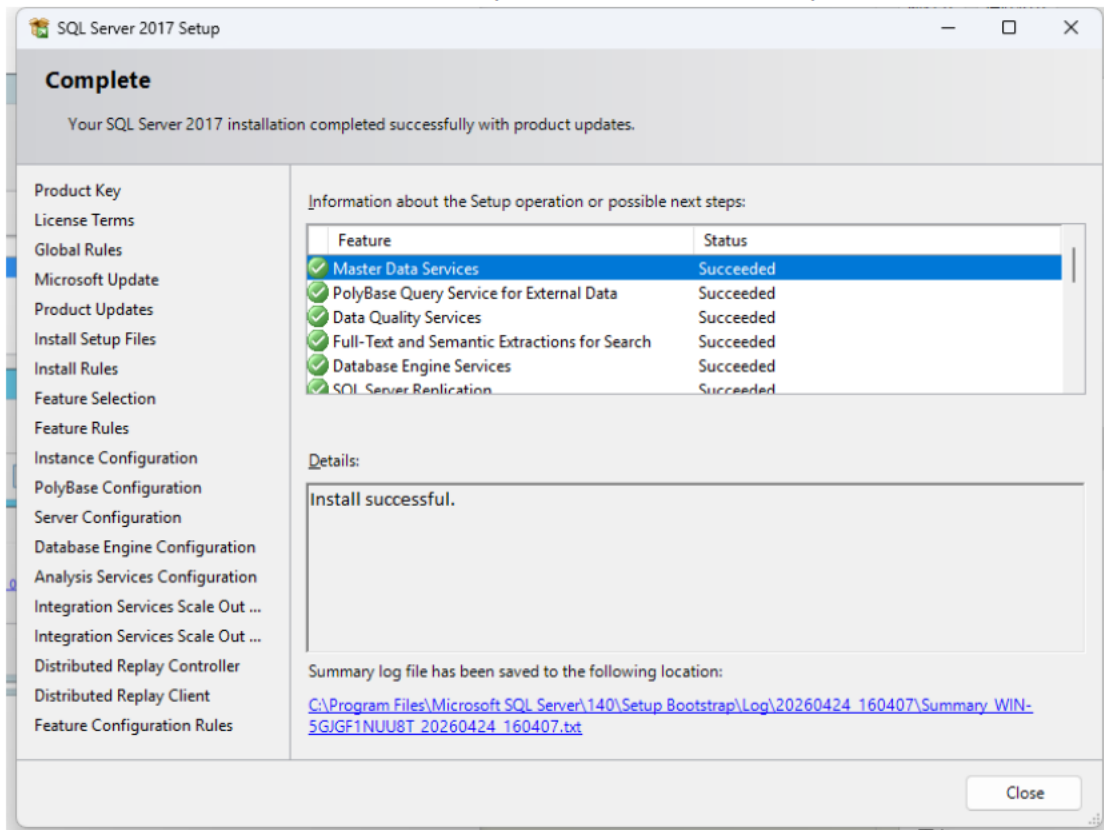


Figure 1-38



1.2.3 Installing SSMS-Setup-ENU.exe

(1) Double-click "SSMS-Setup-CHS.exe" to start the installation.

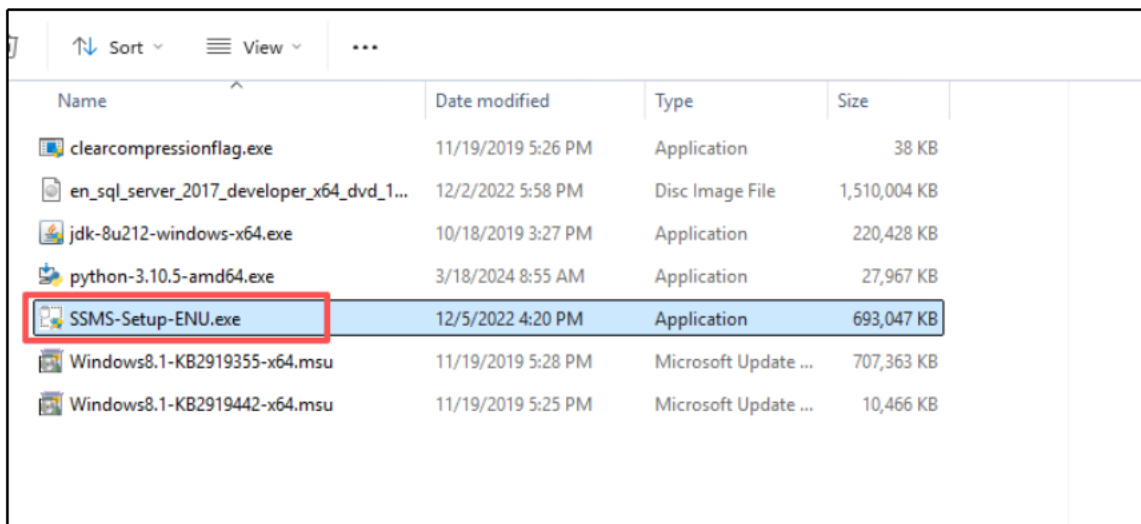


Figure 1-39

(2) Click "Install".

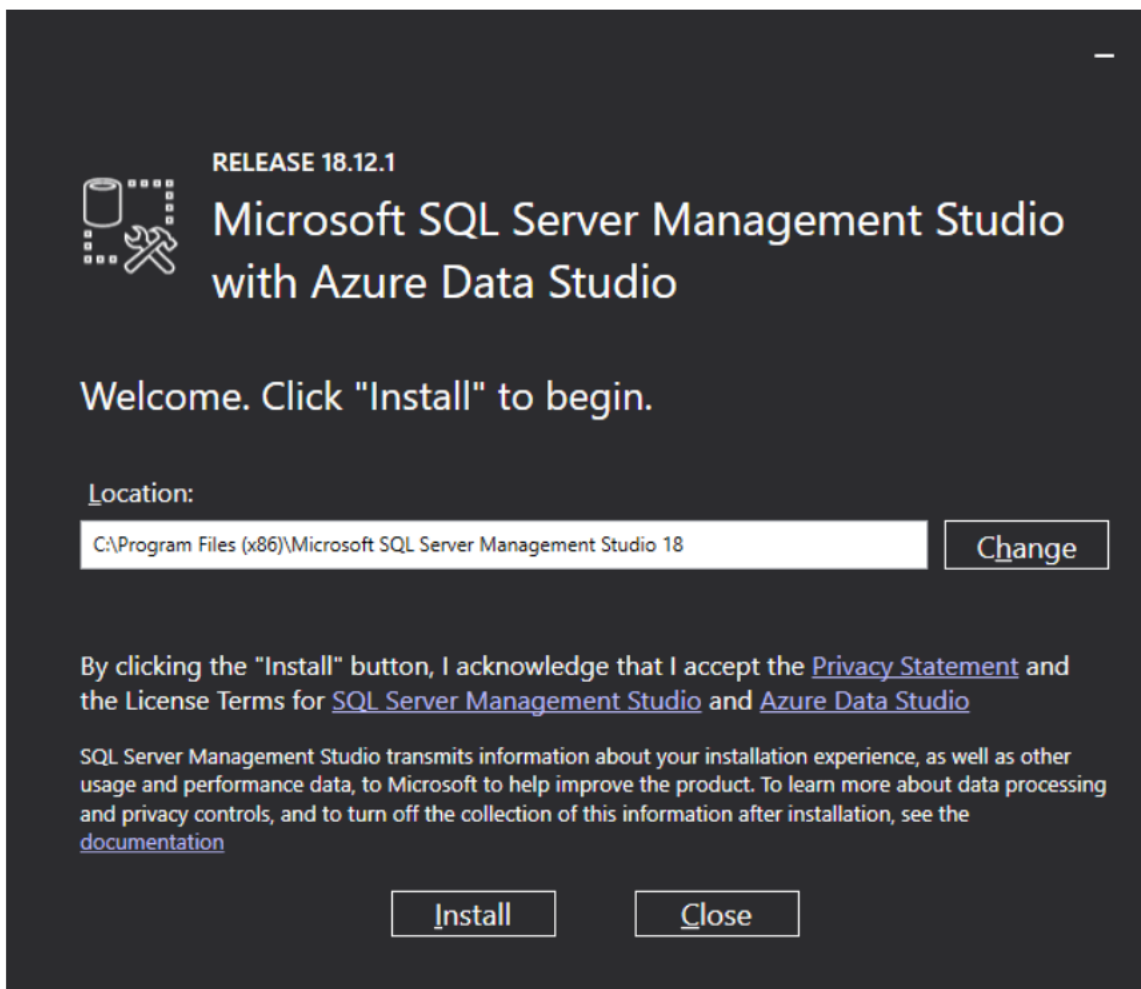


Figure 1-40

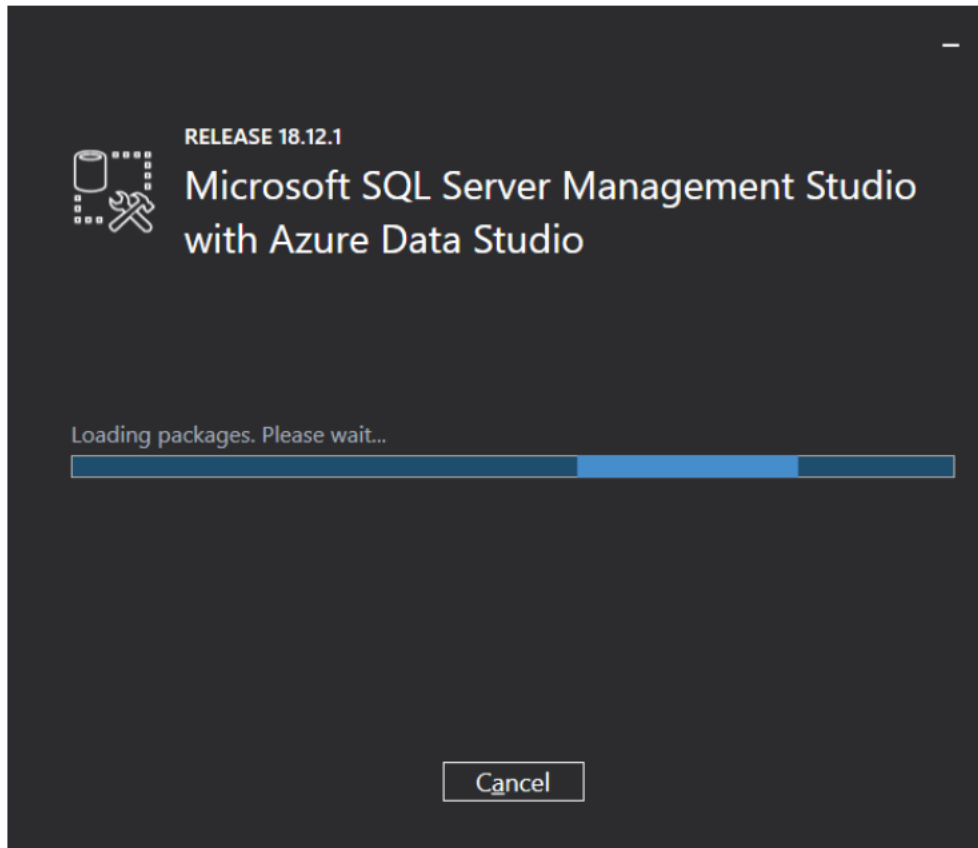


Figure 1-41

- (3) After the installation is complete, restart the computer.



Figure 1-42



1.2.4 Configuring SQL Server 2017

Go to the "Start" menu on the Windows Server 2012 desktop, then click "Start → Apps → SQL Server 2017 Configuration Manager" to enter the SQL Server configuration interface:

- (1) Click the "Server Applications" (down arrow).

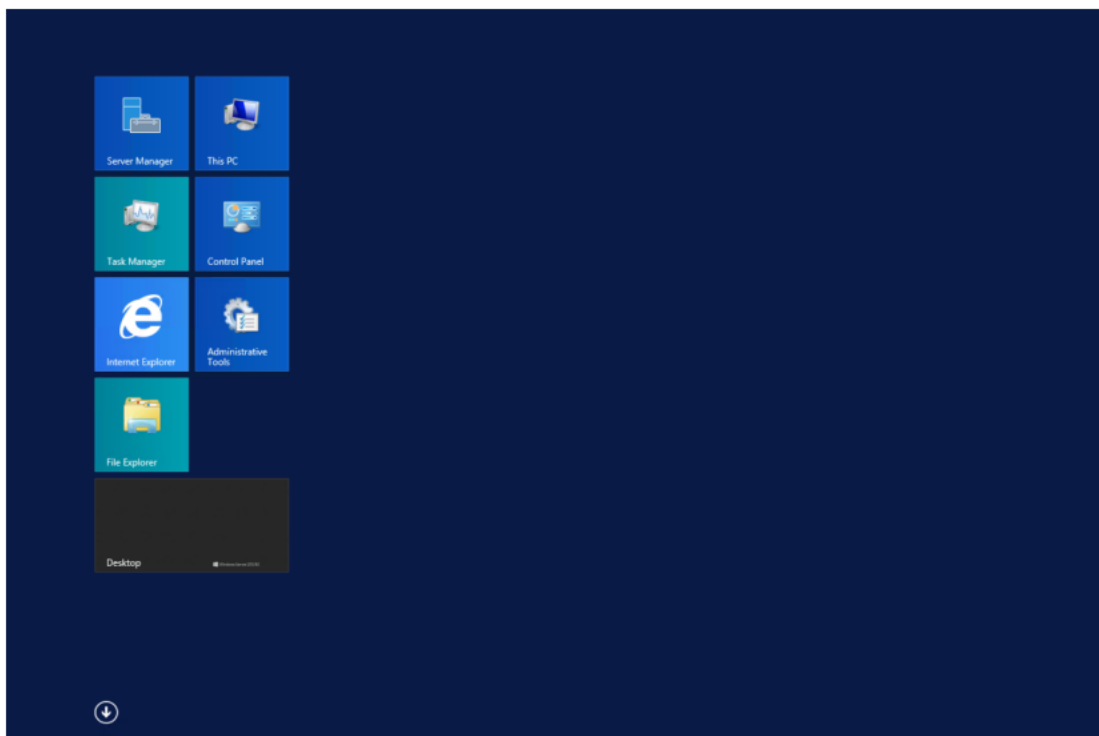


Figure1-43

- (2) Locate "SQL Server 2017 Management Configuration" and open it.

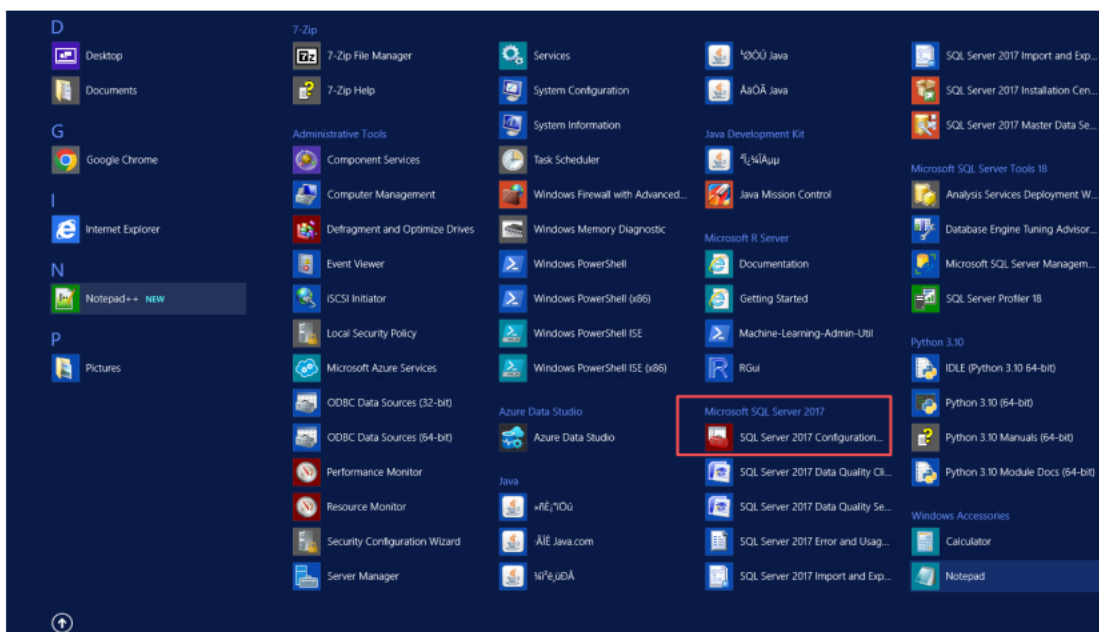


Figure 1-44



(3) Click "SQL Server Services", and set all startup modes to "Automatic" as shown below.

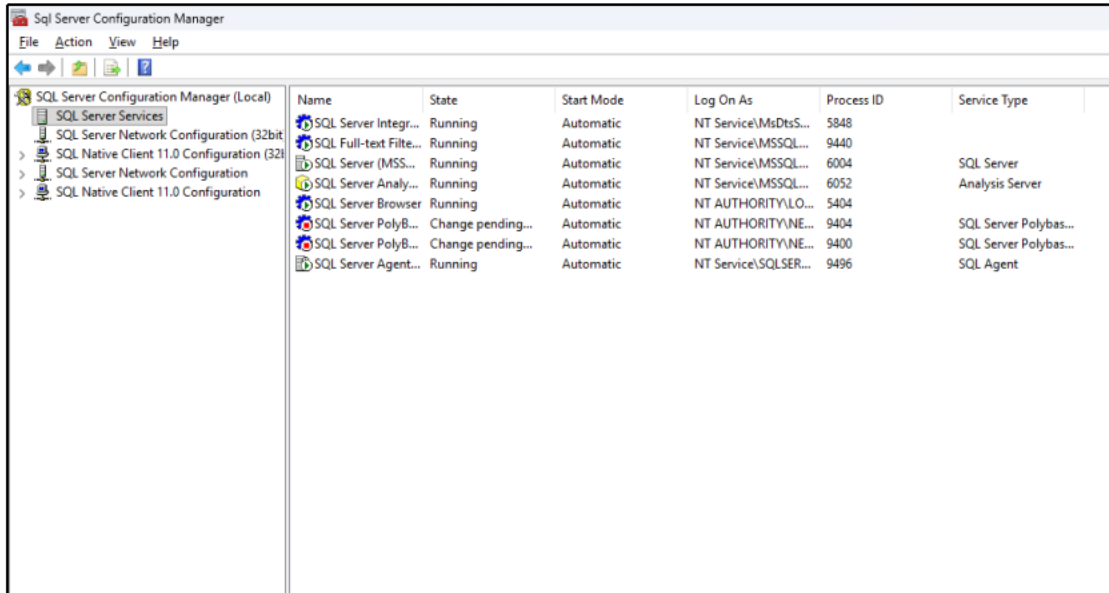


Figure1-45

(4) Under "SQL Server Network Configuration", set the status to "Enabled".

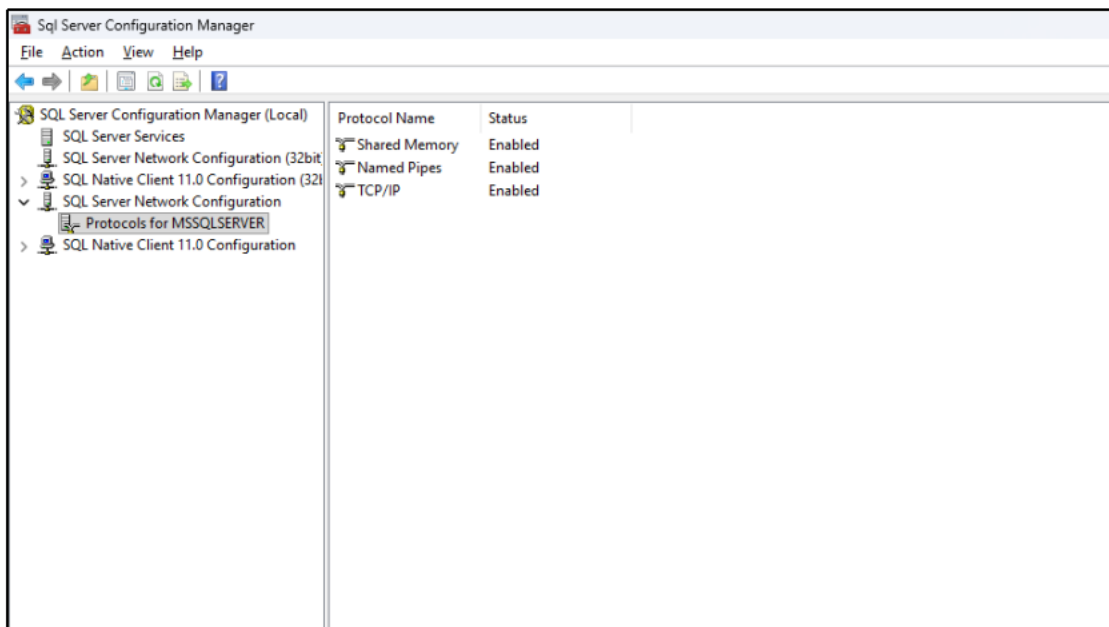


Figure1-46

(5) Restart the computer to complete the configuration. A restart is required.

1.3 Uninstalling the Software

Go to the folder where the software is installed on the computer. As shown in Figure 1-47, delete the entire directory to uninstall the software.

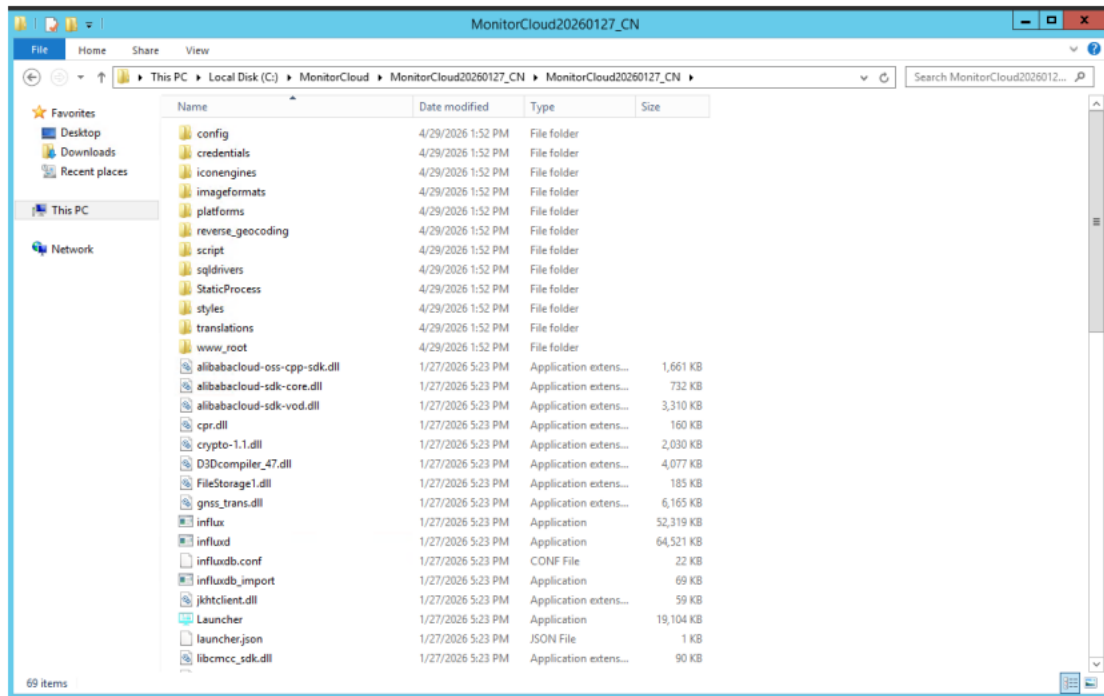


Figure 1-47



2 Software Overview

2.1 Platform Overview

The Automated Deformation Monitoring Management Platform is designed to address safety hazards caused by geological disasters such as highway slope failures, landslides, and collapses. It provides system users with timely and stable monitoring data to enable early warning of potential dangers.

The platform places special emphasis on BeiDou GNSS. It uses internationally advanced high-precision GNSS data processing algorithms and overcomes a series of key technical challenges, including real-time Kalman filter feedback and handling of anomalous observations in complex environments. The monitoring accuracy can reach 1.5 mm + 0.5 ppm horizontally and 3 mm + 0.5 ppm vertically, forming a complete and stable high-precision BeiDou GNSS deformation monitoring solution.

Other deformation monitoring sensors supported by the platform include deep displacement sensors, crack meters, rain gauges, inclinometers, soil moisture sensors, and video monitoring systems.

System users are managed hierarchically, divided into three levels: Owner, Administrator, and Member.

- "Owner" accounts have the highest management privileges within the user organization. Typically held by the top leader of the organization, these accounts can manage and operate all projects, monitored slopes, monitoring devices, and lower-level user accounts within their organization.
- "Administrator" accounts are generally project managers. They can manage and operate all monitored slopes, monitoring devices, and "Member" accounts within the projects they are responsible for.
- "Member" accounts are low-privilege users of the system. They can only view observation data assigned to their projects and do not have operational permissions.



2.2 Checking the Platform Status

The launcher for the Monitoring Cloud Platform is located in the "ZXCloud" folder. Find "Launcher.exe" in this folder and double-click it to start the Monitoring Cloud Platform, as shown below in Figure 2-1.

Name	Date modified	Type	Size
reverse_geocoding	4/24/2026 5:05 PM	File folder	
script	4/24/2026 5:05 PM	File folder	
sqldrivers	4/24/2026 5:05 PM	File folder	
StaticProcess	4/24/2026 5:05 PM	File folder	
styles	4/24/2026 5:05 PM	File folder	
translations	4/24/2026 5:05 PM	File folder	
www_root	4/24/2026 5:05 PM	File folder	
alibabacloud-oss-cpp-sdk.dll	4/23/2026 5:29 PM	Application extens...	1,661 KB
alibabacloud-sdk-core.dll	4/23/2026 5:29 PM	Application extens...	732 KB
alibabacloud-sdk-vod.dll	4/23/2026 5:29 PM	Application extens...	3,310 KB
cpr.dll	4/23/2026 5:29 PM	Application extens...	160 KB
crypto-1.1.dll	4/23/2026 5:29 PM	Application extens...	2,030 KB
D3Dcompiler_47.dll	4/23/2026 5:29 PM	Application extens...	4,077 KB
FileStorage1.dll	4/23/2026 5:29 PM	Application extens...	185 KB
gnss_trans.dll	4/23/2026 5:29 PM	Application extens...	6,134 KB
influx	4/23/2026 5:29 PM	Application	52,319 KB
influxd	4/23/2026 5:29 PM	Application	64,521 KB
influxdb	4/23/2026 5:29 PM	CONF File	22 KB
influxdb_import	4/23/2026 5:29 PM	Application	69 KB
jkhtclient.dll	4/23/2026 5:29 PM	Application extens...	59 KB
Launcher	4/23/2026 5:29 PM	Application	19,104 KB
launcher.json	4/24/2026 5:07 PM	JSON File	1 KB
libcmcc_sdk.dll	4/23/2026 5:29 PM	Application extens...	90 KB
libcrypto-1_1-x64.dll	4/23/2026 5:29 PM	Application extens...	3,372 KB
libcurl.dll	4/23/2026 5:29 PM	Application extens...	456 KB

Figure 2-1

Upon the first launch of the software, a file named "pc.info" will be generated in the license folder within the software installation directory, as shown in Figure 2-2. Send this file to the technician to request license authorization.

Note: The "pc.info" file is unique for each server. Ensure that the file corresponding to the correct server is sent to the technician; otherwise, the authorization may fail.

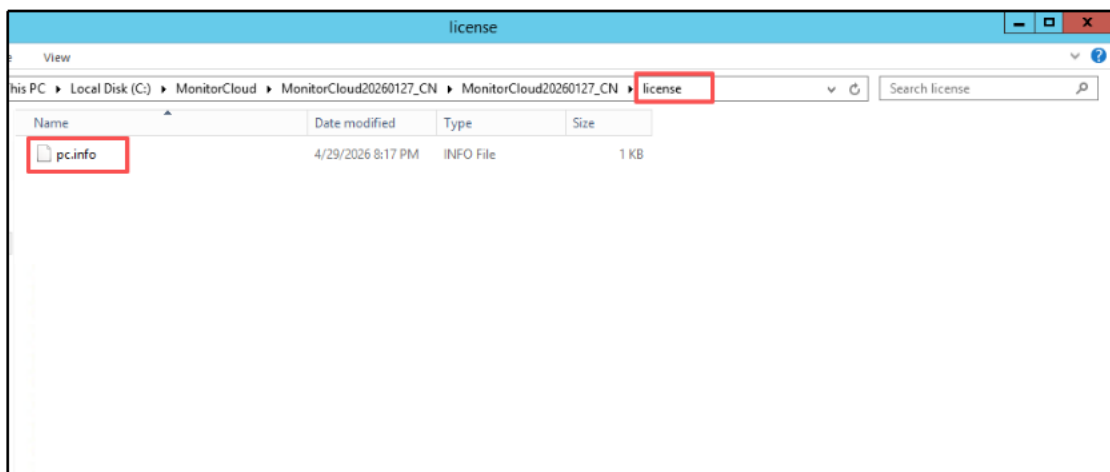


Figure 2-2



After the technician completes the authorization process, a "license.dat" authorization file will be generated and sent to you. Place this file in the license folder of the software installation directory, as shown in Figure 2-3.

Important: The authorization file must be named "license.dat". Remove any extra characters or spaces in the filename; otherwise, the authorization may fail.

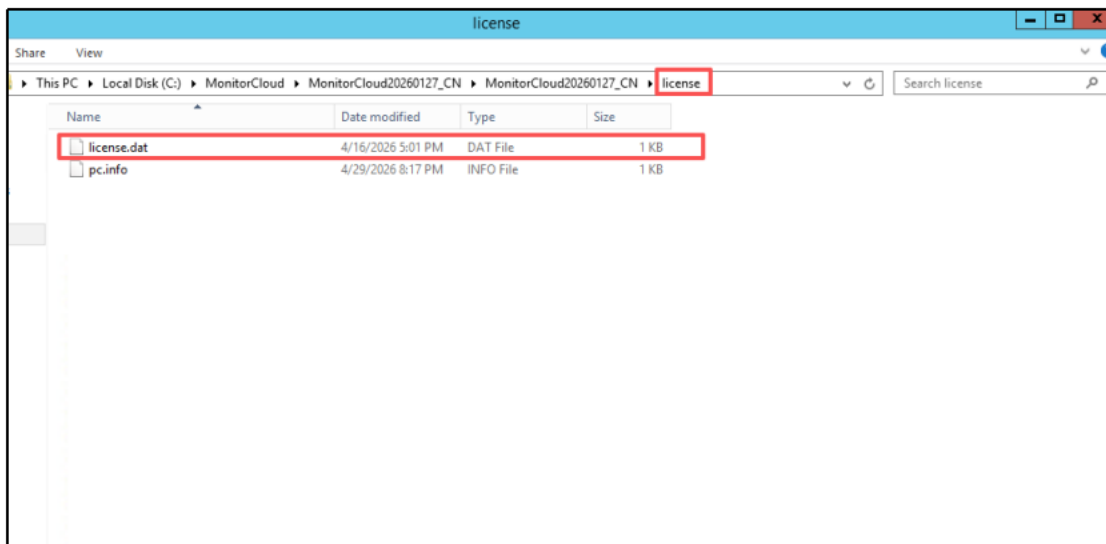


Figure 2-3

Once the authorization file has been installed, restart the software to complete the license activation, as shown in Figure 2-4.

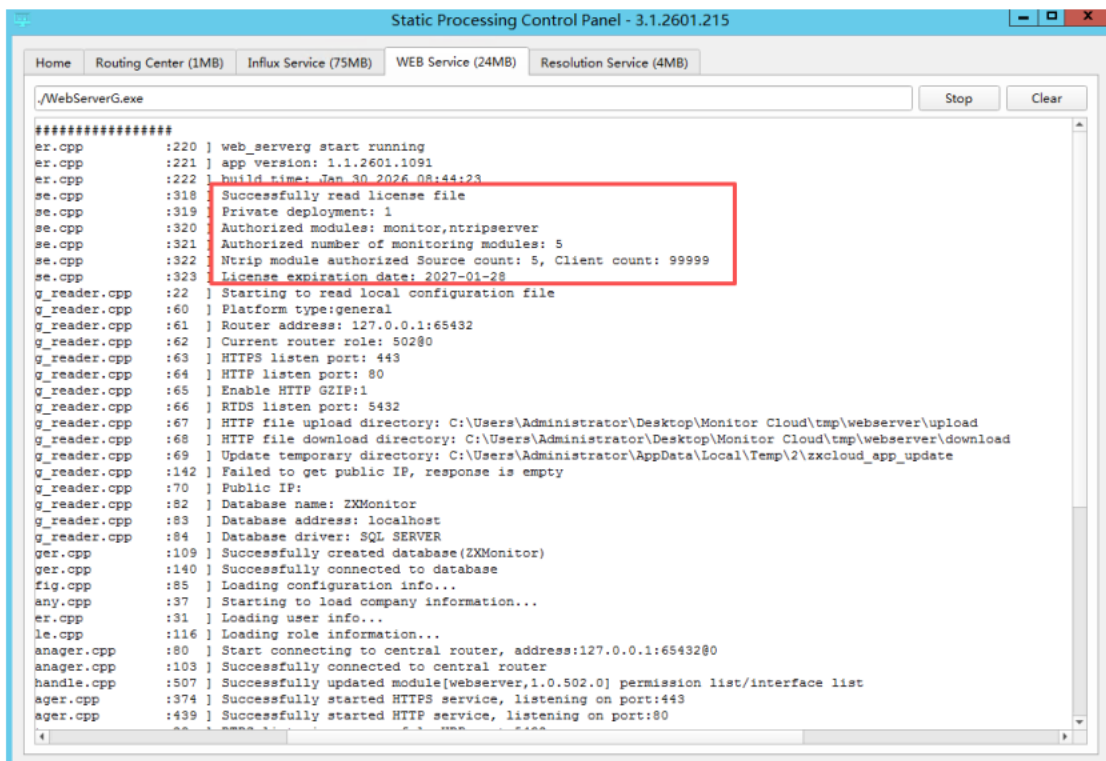


Figure 2-4



Check the Control Panel to verify the software status. The software has successfully started if the following messages are displayed, as shown in Figure 2-5:

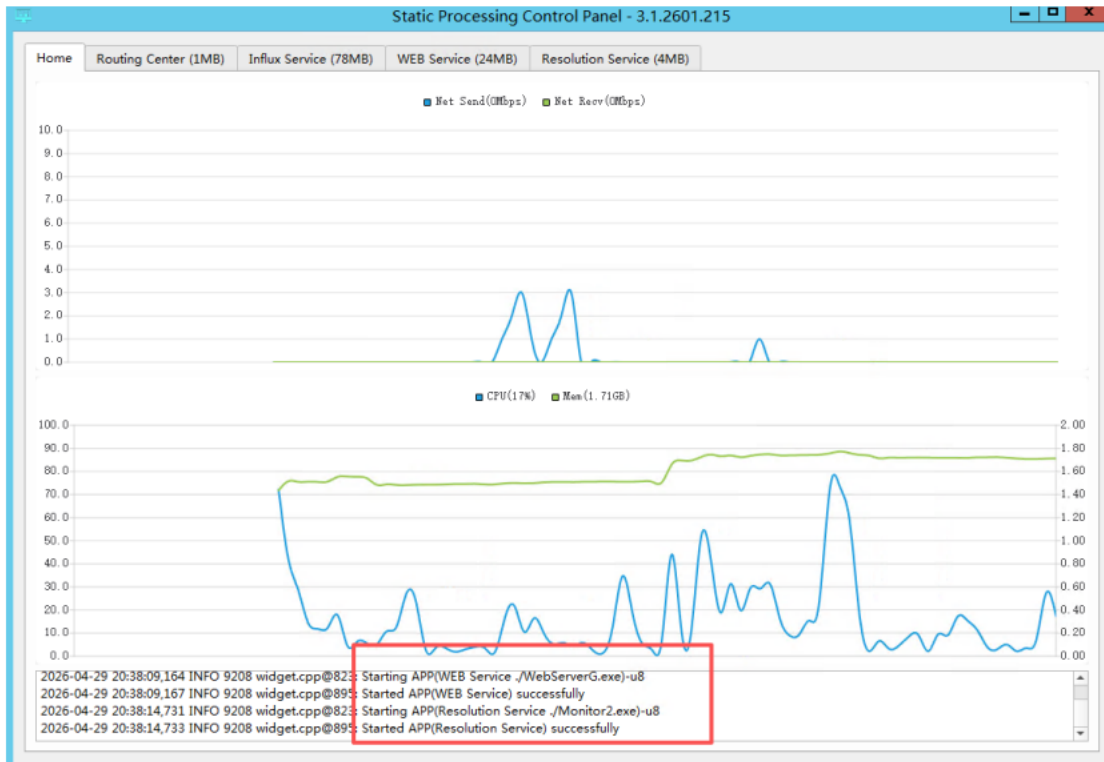


Figure 2-5



2.3 Platform Login

For local login, use the following URL format:

`https://127.0.0.1/index.html#/login`

On the first deployment, log in with the account "admin". No password is required initially. Click "Login" to access the interface, which will prompt you to set a custom password.

Note: If the platform is deployed on a cloud server (e.g., Alibaba Cloud), ensure that the following TCP ports are open in advance: 8882 and 443.

The login interface is shown below.

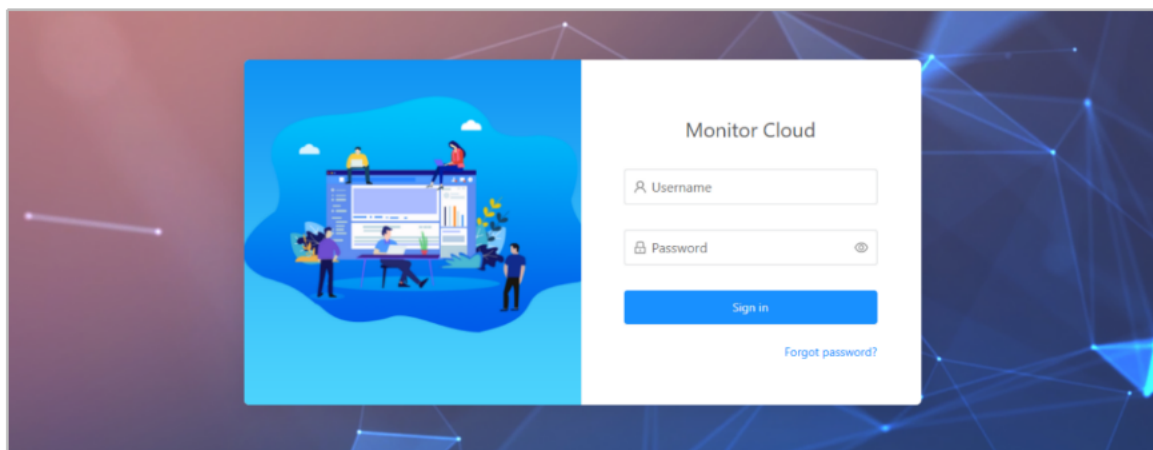



Figure 2-6



2.4 System Software License

The "System Info" interface contains information on the license, system plugins, and system upgrade features.

License Information:

To use the installed system, a license is required. First, click the **Download PC-INFO** button, as shown in Figure 2-7, to download the authorization file . Submit this file to the technical support team for processing.

After receiving the license file, click **Upload license file** to apply the authorization. The license information is shown in Figure 2-10.

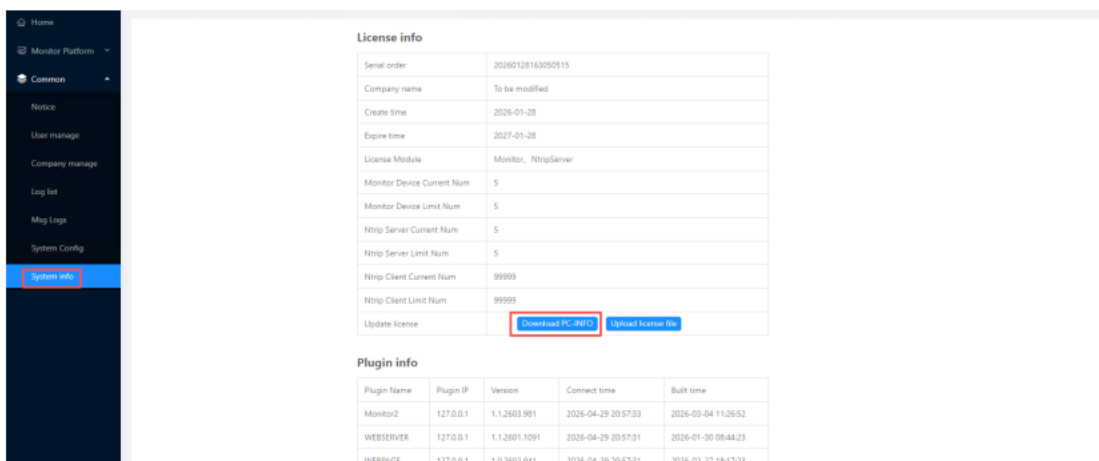


Figure 2-7

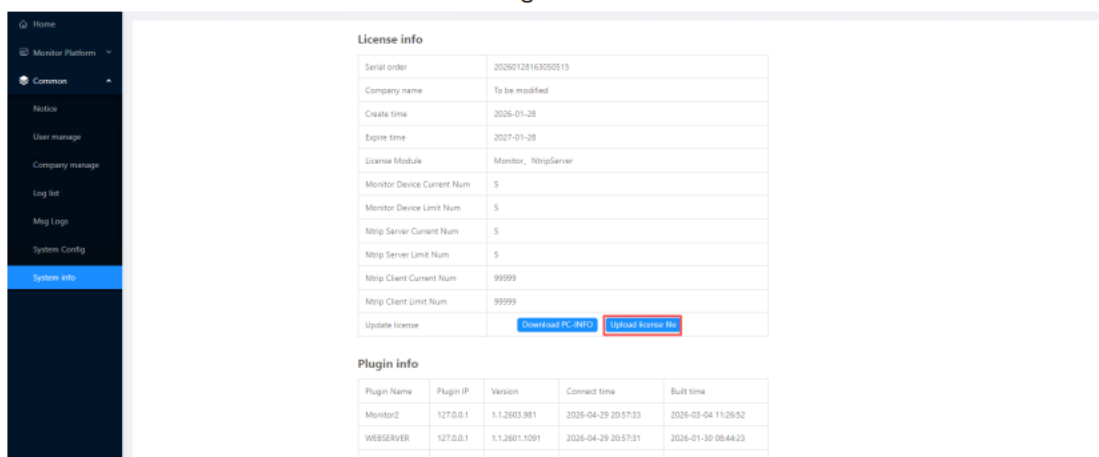


Figure 2-8

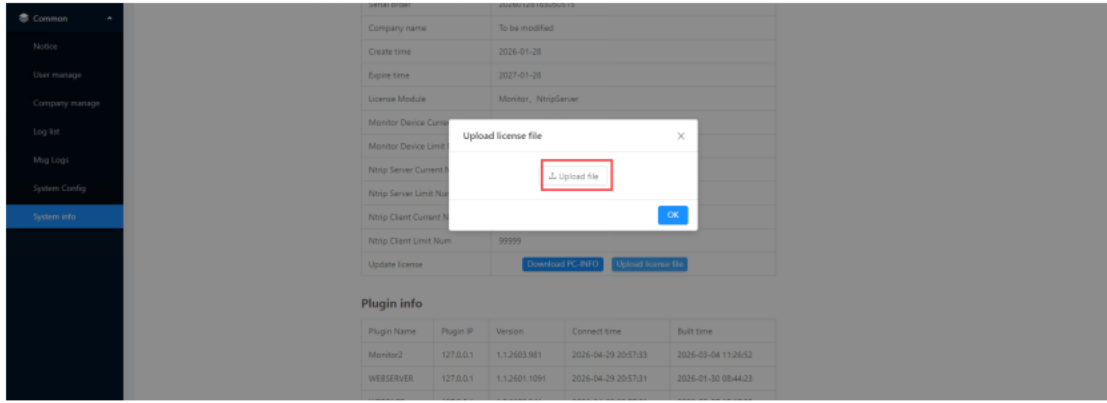


Figure 2-9

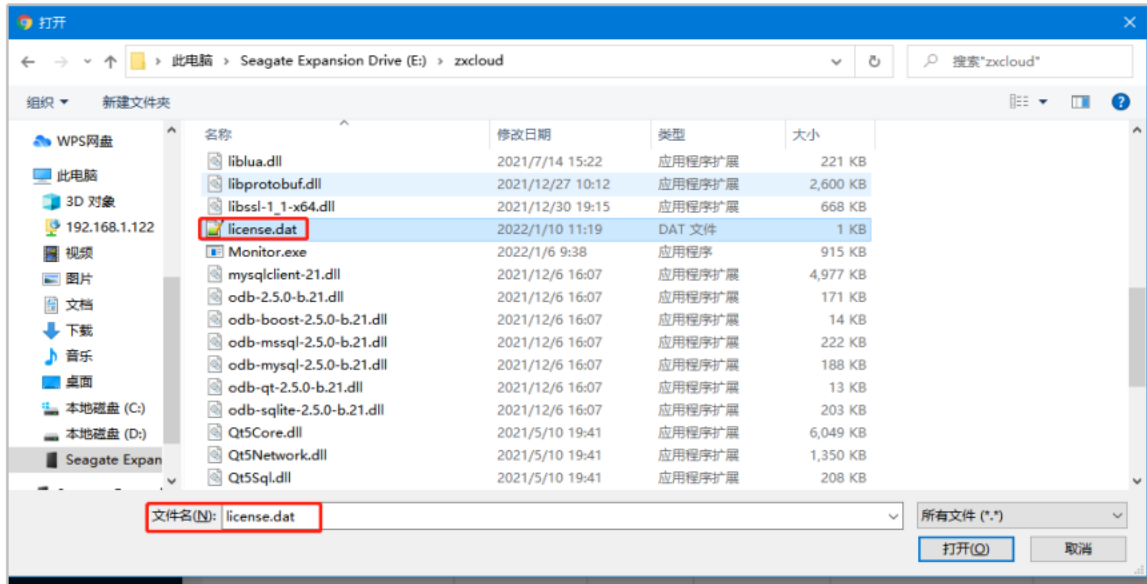


Figure 2-10



3 Features Overview

3.1 Monitoring Platform

3.1.1 Independent Monitoring

The "Monitor View" interface is one of the core functional modules of the system. It provides visualization of high-precision GNSS displacement monitoring data, supports calculation control, and allows querying of results. It also enables real-time and historical data management and analysis for monitoring projects, stations, and reference stations.

After configuring the measurement points, navigate to the "Monitor View" page. You can use the "Time frame" filter to view the specific data of project measurement points.

- (1) Statistical Charts: Data is displayed in three forms: "Gnss process diagram", "Horizontal trajectory diagram", and "Settlement trajectory diagram". These charts show trends of observed values and changes, supporting full lifecycle management and analysis of historical monitoring data.

The statistical charts include two measurement types: observed values and change values. Six observation attributes are available: three-dimensional baseline length, horizontal baseline length, east coordinate, north coordinate, and vertical coordinate. In the trajectory diagrams, red markers indicate the current point, and green markers indicate the starting point.

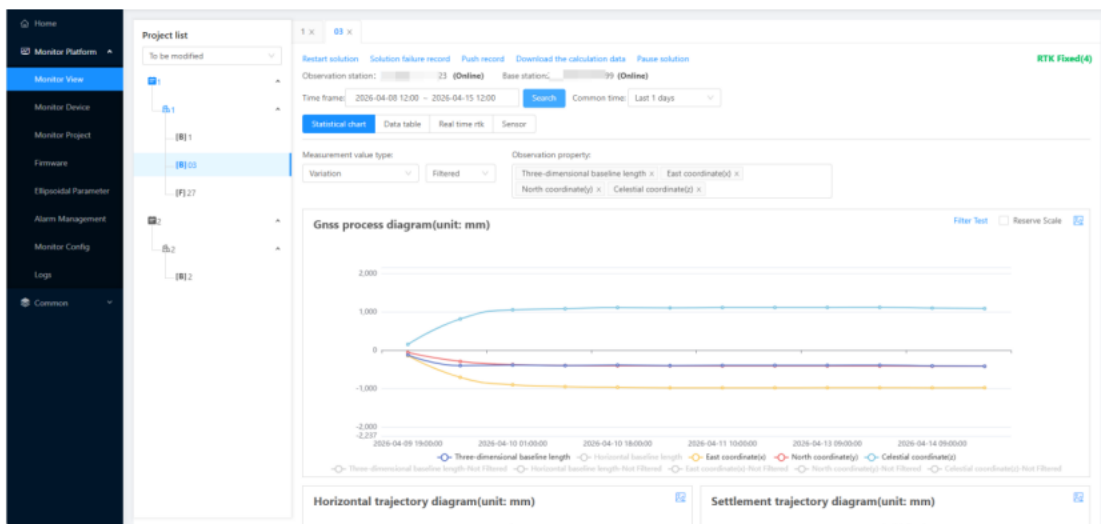


Figure 3-1

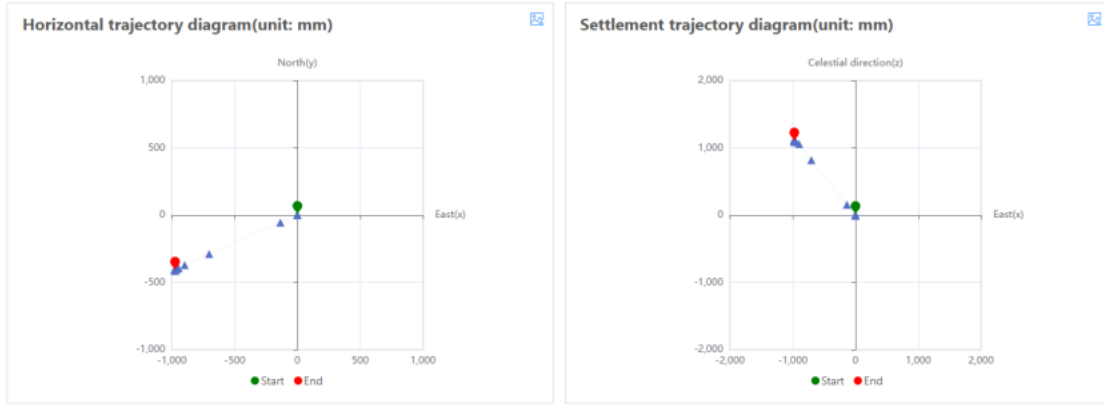


Figure 3-2

(2) Data Table : GNSS displacement monitoring data is managed in a tabular format, providing structured presentation and full lifecycle management of monitoring data, as shown in the figure below. The table supports querying monitoring data within a specified "Time frame" and displays key calculation results such as acquisition time, baseline length, and three-dimensional coordinate deviations.

Note: If the host has been moved, to ensure smooth fluctuation of the curves, the initial values need to be reset or the calculation must be rerun.

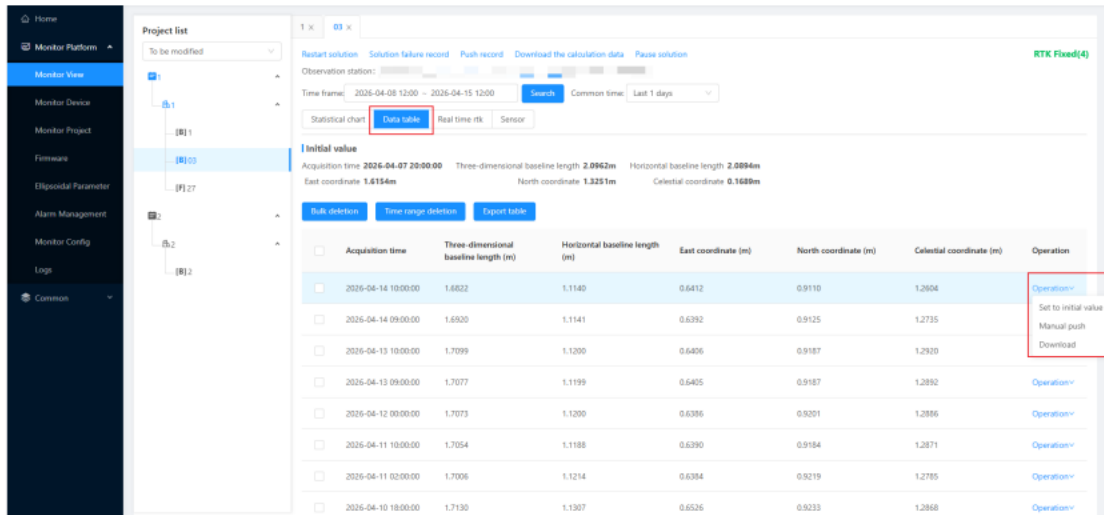


Figure 3-3



(3) Real time RTK: When the receiver is in rover mode and a fixed solution is achieved, real-time positioning data can be viewed, as shown in Figure 3-4.

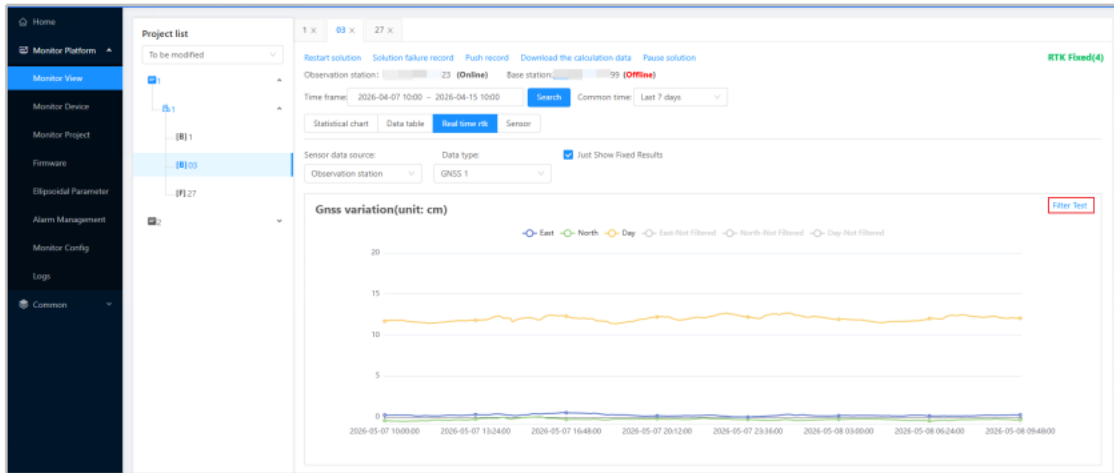


Figure 3-4

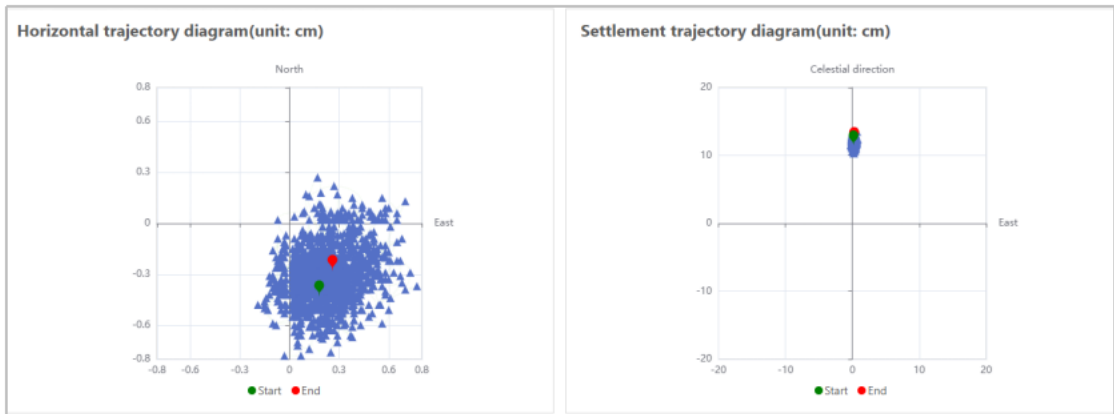


Figure 3-5

Click "Filter Test" in Figure 3-4 to enter the filter settings page. On this page, you can configure the parameters: process noise variance, measurement noise variance, maximum process noise, innovation threshold, and adaptive window size, as shown in Figure 3-6.

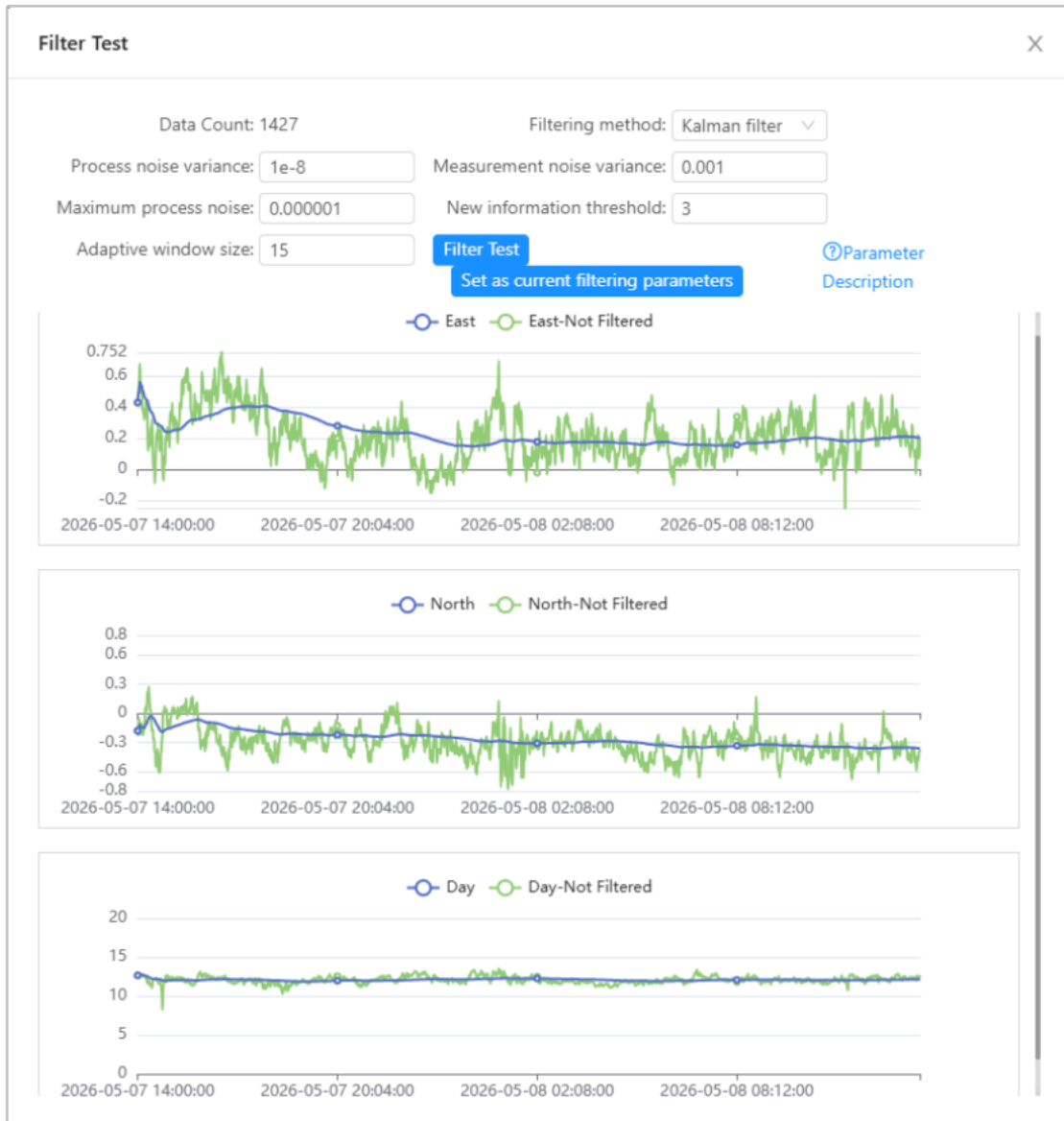


Figure 3-6

Click "Parameter Description" in Figure 3-6 to view detailed explanations of the theoretical basis for each parameter configuration, as shown in Figure 3-7.



Parameter Description X			
Parameter	Theoretical Basis	Too High Settings	Too Low Settings
Process Noise Variance	(Minimum Displacement) ²	① Output too noisy, not smooth ② Almost equal to raw data ③ Filtering loses meaning	① Extremely smooth, like a straight line ② Severe response lag ③ True motion filtered out
Measurement Noise Variance	(RTK Accuracy) ²	① Extremely smooth ② Severe response lag ③ Extremely slow convergence ④ True changes ignored	① Output too noisy ② Fully follows measurement values ③ No smoothing effect
Maximum Process Noise	(Maximum Displacement) ²	① Abnormal values follow excessively ② Weak control on outliers ③ Output unstable	① Unable to track true changes ② True rapid motion suppressed ③ Adaptive effect weakened
Innovation Threshold	2.5~3.0 (no)	① Adaptive / minimal triggering ② Not sensitive to abnormal detection ③ Slow response to sudden events	① Frequent triggers / over-adaptive ② Normal data treated as abnormal ③ Smoothing effect inconsistent
Adaptive Window Size	Response time / sampling period	① Stable judgment but slow response ② Short-term anomalies averaged out ③ Delay in sudden detection	① Easily misjudged ② Single abnormal value triggers adaptation ③ Output unstable

Figure 3-7

(4) Sensors: Sensor data is displayed in chart form. The data type can be selected from built-in sensors, GNSS, and data continuity. The built-in sensors display Air pressure (Figure 3-9), Acceleration (Figure 3-10), Specific Force Std. (Figure 3-11), Voltage (Figure 3-12), and System occupancy (Figure 3-13). The types of built-in sensors may vary depending on the receiver model; refer to the actual device for specifics.

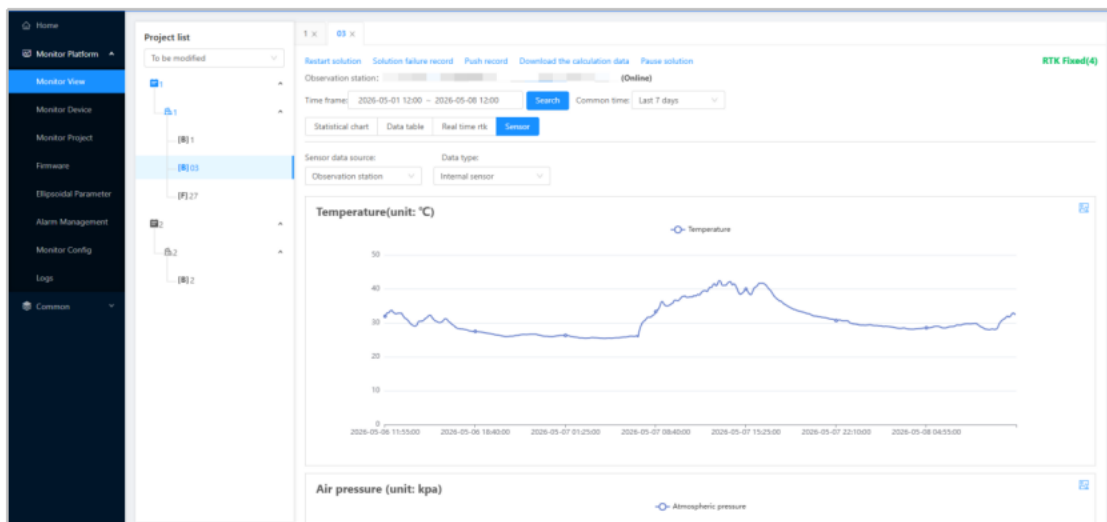


Figure 3-8



Figure 3-9

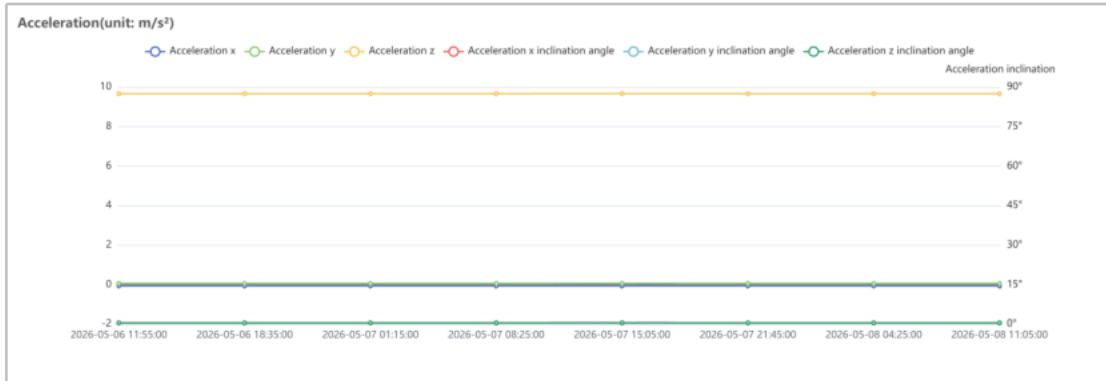


Figure 3-10

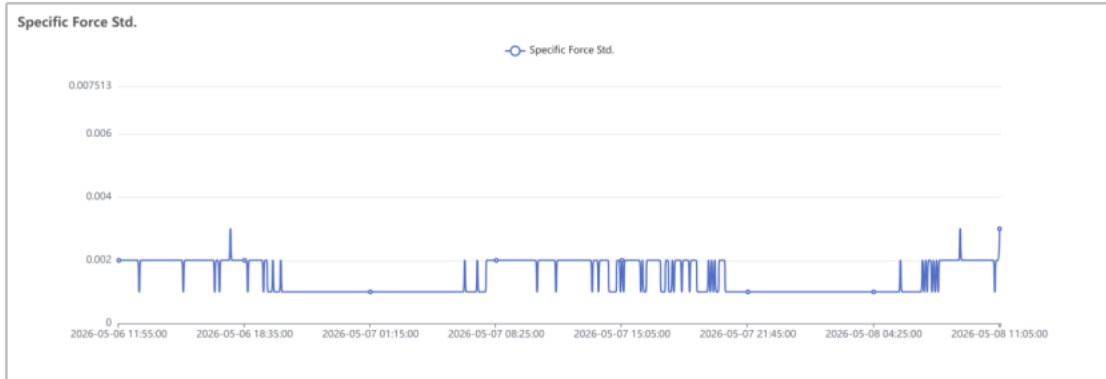


Figure 3-11

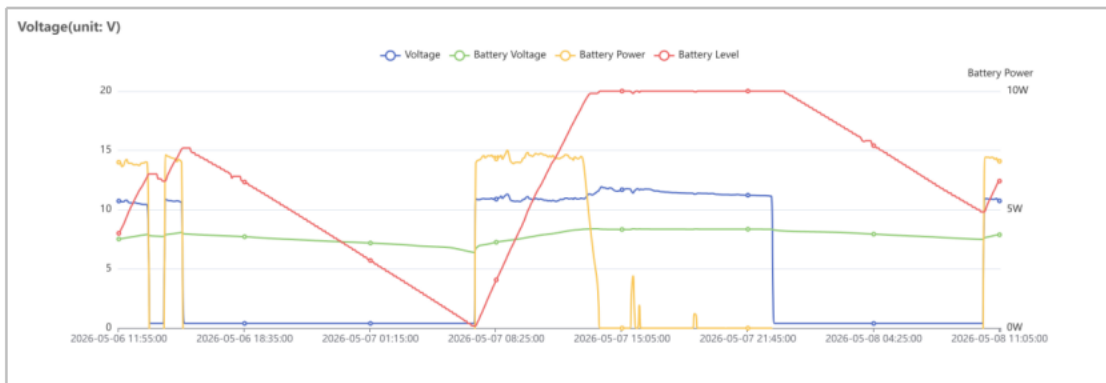


Figure 3-12



Figure 3-13

"GNSS 1" displays GNSS changes, the number of satellites in use, and RMS, as shown in Figure 3-14.



Figure 3-14

Data Continuity displays the daily data volume, as shown in Figure 3-15.

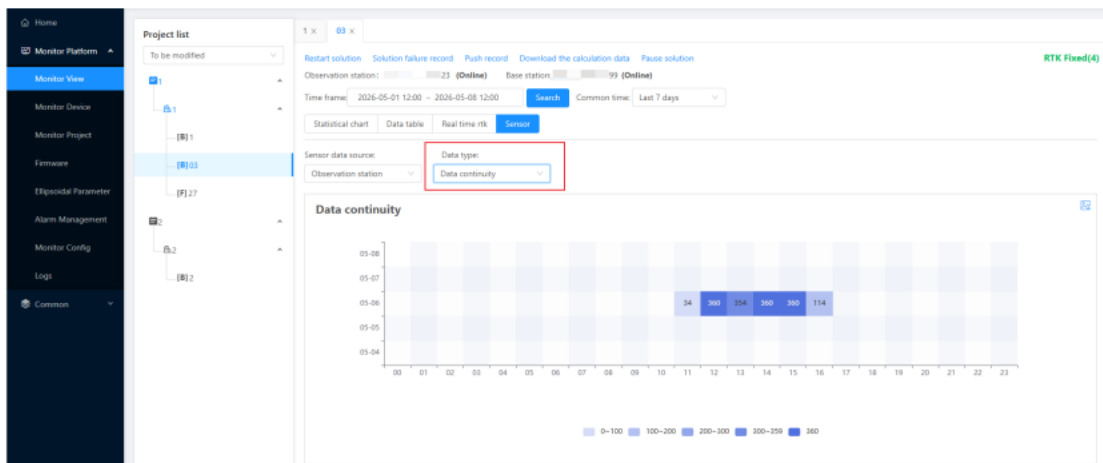


Figure 3-15



Click the **Solution failure record** button to query records of calculation failures, as shown in Figure 3-16.

Order	Result ID	Time	Solution state	Solution module exit state	Solving module exit code	Operation
1	3009	Begin: 2026-05-07 21:00:00 End: 2026-05-07 23:00:00	geo_state.state-2	0	132	Detail Download
2	2996	Begin: 2026-05-07 20:00:00 End: 2026-05-07 22:00:00	geo_state.state-2	0	132	Detail Download
3	2983	Begin: 2026-05-07 19:00:00 End: 2026-05-07 21:00:00	geo_state.state-2	0	132	Detail Download
4	2970	Begin: 2026-05-07 18:00:00 End: 2026-05-07 20:00:00	geo_state.state-2	0	132	Detail Download
5	2957	Begin: 2026-05-07 17:00:00 End: 2026-05-07 19:00:00	geo_state.state-2	0	132	Detail Download
6	2944	Begin: 2026-05-07 16:00:00 End: 2026-05-07 18:00:00	geo_state.state-2	0	132	Detail Download
7	2931	Begin: 2026-05-07 15:00:00 End: 2026-05-07 17:00:00	geo_state.state-2	0	132	Detail Download
8	2918	Begin: 2026-05-07 14:00:00 End: 2026-05-07 16:00:00	geo_state.state-2	0	132	Detail Download
9	2905	Begin: 2026-05-07 13:00:00 End: 2026-05-07 15:00:00	geo_state.state-2	0	132	Detail Download
10	2892	Begin: 2026-05-07 12:00:00 End: 2026-05-07 14:00:00	geo_state.state-2	0	132	Detail Download

Total 14 data < 1 2 >

Figure 3-16

Click the "Download the calculation data" button to download the calculation data for the current measurement point, as shown in Figure 3-17.

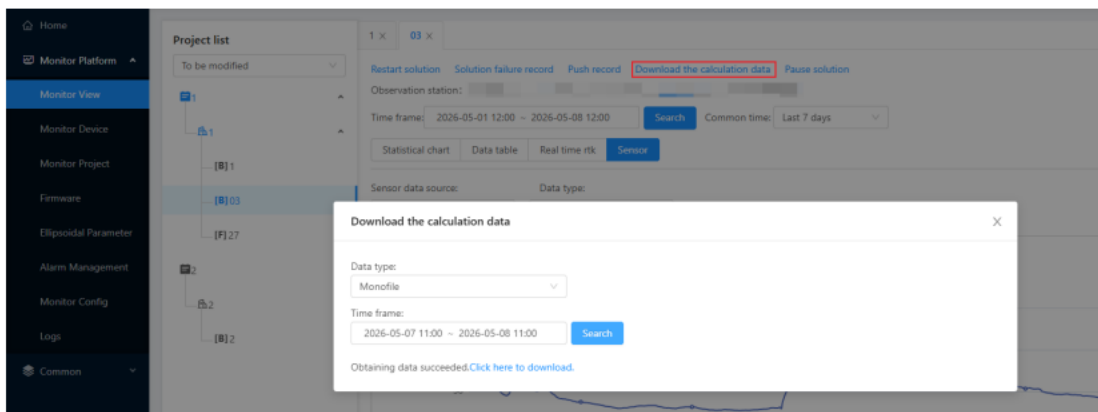


Figure 3-17



3.1.2 Monitor Device

(1) Add Device: After the monitoring software is running properly, you need to add a device. On the "Device Management" page, click the **+ Add** button and enter the required fields: "Device ID", "Device Name", "Model", and "Manufacturer". Then click **Submit** to complete the operation, as shown in Figure 3-18.

Figure 3-18

(2) Operations: After adding a device, you can determine whether it is online by checking the file update time. If the device is online, it will be indicated by a green light, as shown in Figure 3-19 (gray light indicates the device is offline). Click "Operations" on the right to modify the device, as shown in Figure 3-20, or to delete the device, as shown in Figure 3-21.

Order	SN	Model & equipment name	Connection time	Data update time	Data today	Upload time interval	Satellite number	Company	Operation
1	21 20	U6	2026-05-07 14:18:59	2026-05-08 14:19:35	10.40MB	-1s	0	To be modified 1/1/03	Modify Details Sensor
2	23 24	U6	2026-05-08 13:52:27	2026-05-08 14:20:27	1.90MB	5s	39	To be modified 1/1/03	Modify Details Sensor
3	23 20	U6	2026-05-04 03:26:55	2026-05-08 14:20:30	49.71MB	1s	38	To be modified 1/1/1	Modify Details Sensor
4	25 20	U6	2026-04-02 20:12:56	2026-04-02 20:14:00				To be modified 1/1/1	Modify Details Sensor
5	W 27	U6						To be modified 1/1/27	Modify Details Sensor

Figure 3-19

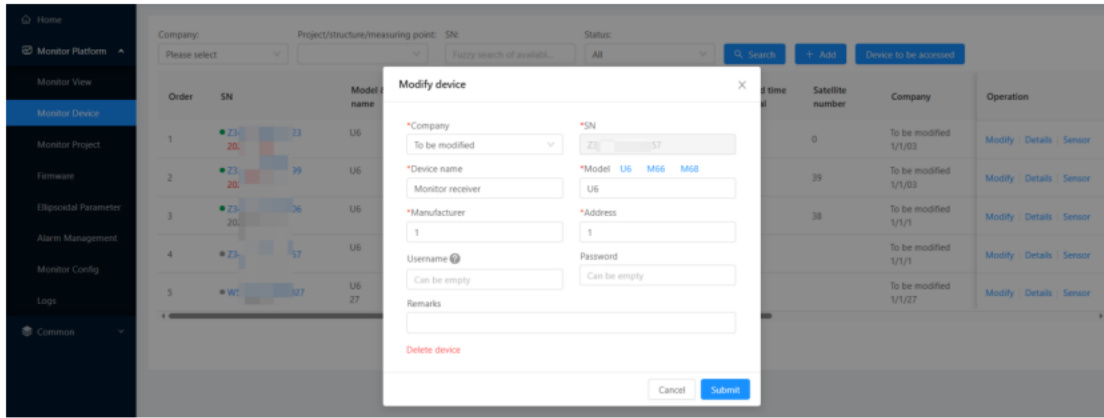


Figure 3-20

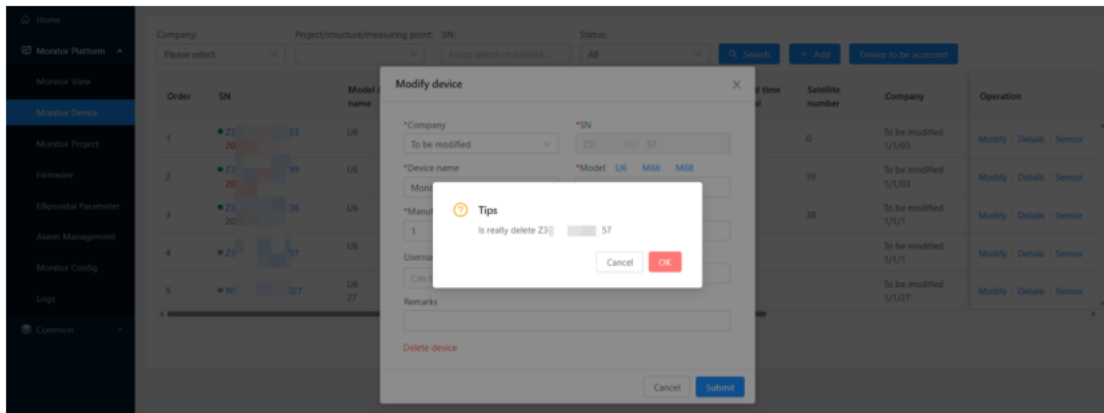


Figure 3-21

(3) Host Status Query: Click the **Details** button to view the "Host status", "Satellite information", "Connection records", and "Host information" for the selected host, as shown in Figure 3-22, Figure 3-23, Figure 3-24, Figure 3-25, Figure 3-26, Figure 3-27, Figure 3-28.

Host status	
SN	Z3-99
Host ip	111.55.205.51
Type	DW DDM-1/U6-FMW3.1.190.2603.806
Received data type	Ephemeris 1019, 1020, 1042, 1044, 1045, 1046
	MSM 1075, 1085, 1095, 1115, 1125
	Sensor
Other	1005, 1033
Protocol	ntrip 2.0
Total received data	Time:338.85KB Day:1.90MB Month:112.89MB Total:814.45MB Details
Satellite number	39
Upload time interval	5s
Data update time	2026-05-08 14:20:27
Device connection time	2026-05-08 13:52:27
Device addition time	2026-01-28 16:55:29
Longitude and latitude	(2-6°, 1-5°) Position
Manufacturer	1
City Name	

Figure 3-22

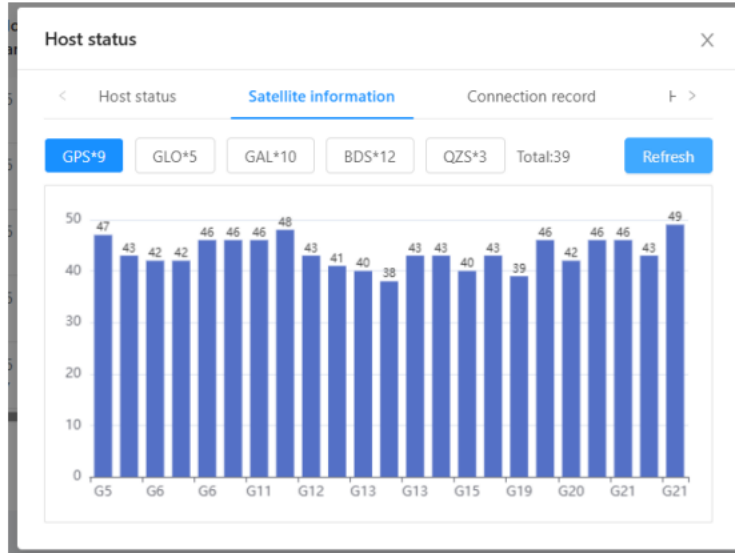


Figure 3-23

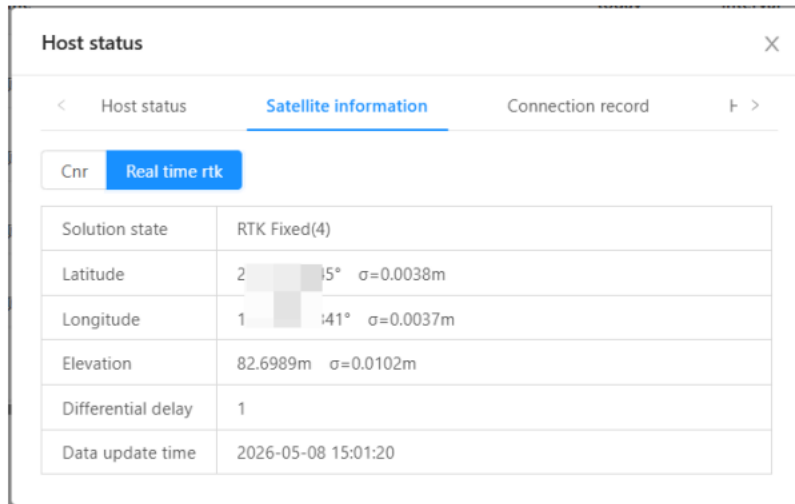


Figure 3-24

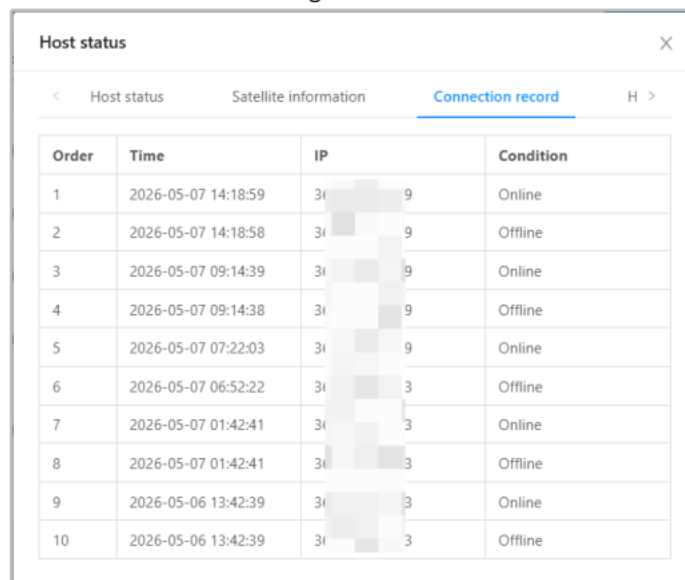


Figure 3-25



Host status X

< Satellite information Connection record **Host information** >

Host information Sim information Mobile network

Update time:2026-02-09 10:57:30

Host brand	N
Host model	U6
PN	[REDACTED]
Function code	[REDACTED]
Expirate date of registration code	2026-04-15
Software compilation time	Mar 25 2025 15:45:31
Software version	U6-MCU.1.51.2503.93
Firmware version number	U6-I [REDACTED]
Positioning board firmware version	R4.1 [REDACTED] 47
Positioning board hardware version	231 [REDACTED] 7

Figure 3-26

Host status X

< Satellite information Connection record **Host information** >

Host information **Sim information** Mobile network

Update time:2026-02-09 10:57:33

Sim status	Normal
ICCID	[REDACTED]
IMEI	[REDACTED]
Total traffic	
Used traffic	
Remaining traffic(balance)	
Network standard	LTE
Operator	
Provider	
Sales date	
Activation date	
Due date	

Figure 3-27

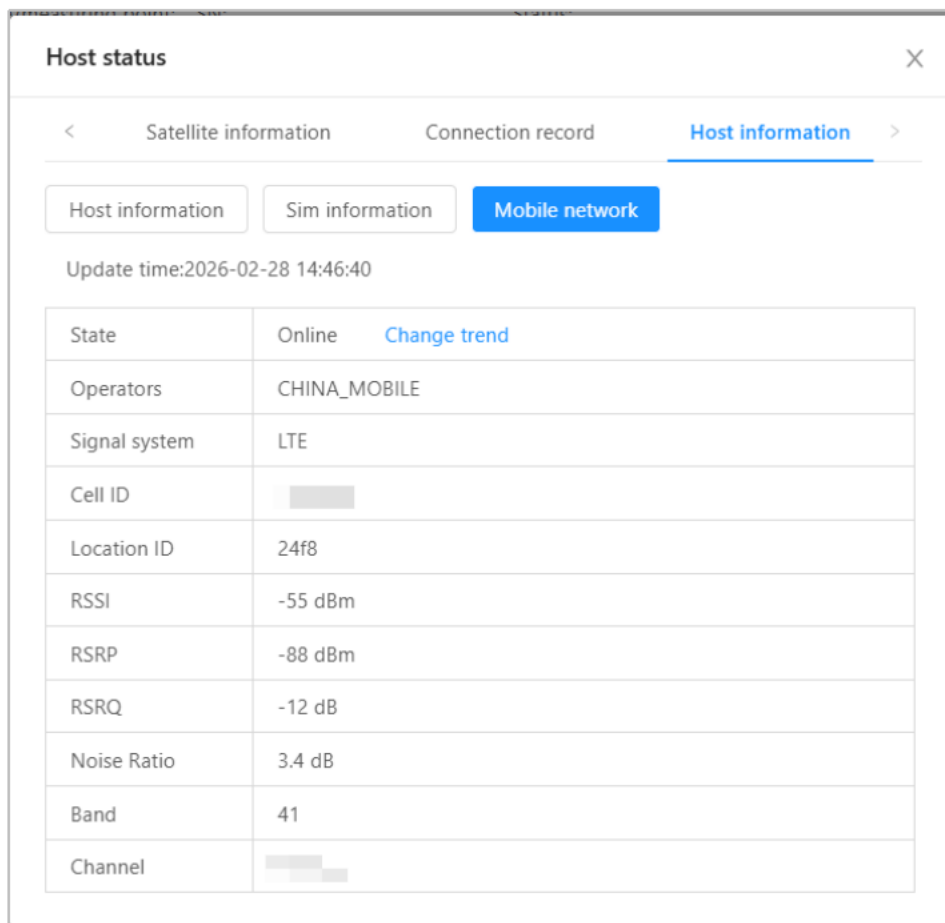


Figure 3-28

3.1.3 Project Management

(1) Add Project: After devices have been added, navigate to the "Project Management" page to create a new project. Click the **+ Add** button and enter the required fields: "Company", "Project Name", "Address", and optionally the latitude and longitude information. Then click **Submit** to complete the operation, as shown in Figure 3-29.

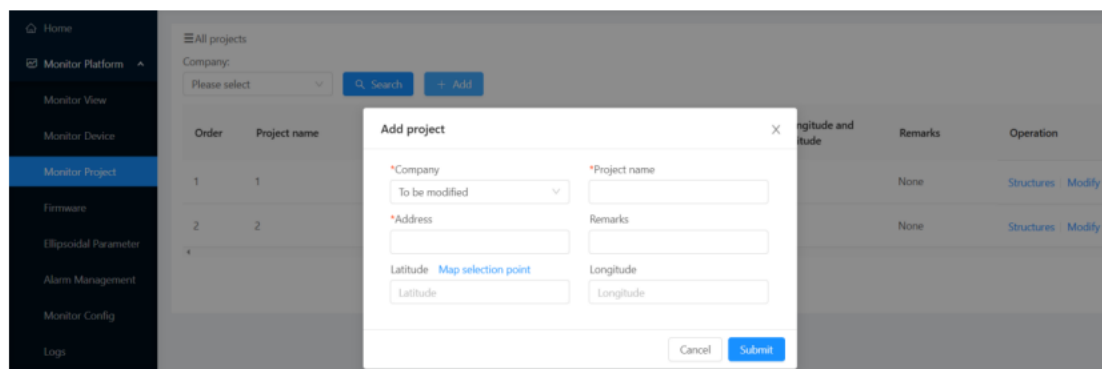


Figure 3-29



(2) After the project has been added, start adding structures. Click **Structures** (Figure 3-30) to enter the submenu, then click **+ Add**. Fill in the required fields: "Type", "Structure Name", "Address", and optionally "Remarks" and latitude/longitude information. Click **Submit** to complete the operation, as shown in Figure 3-31.

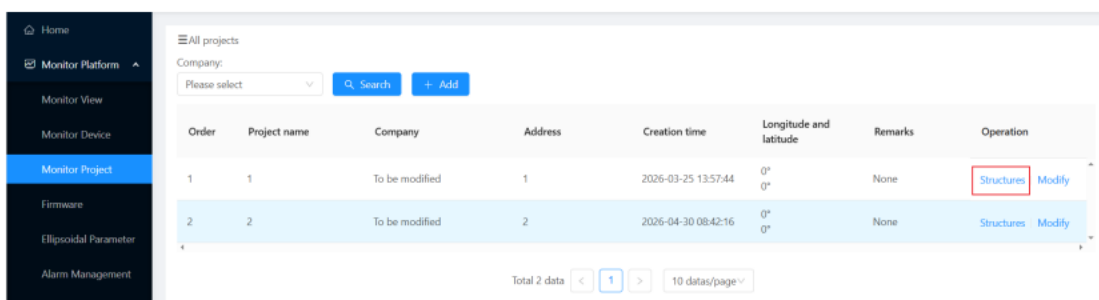


Figure 3-30

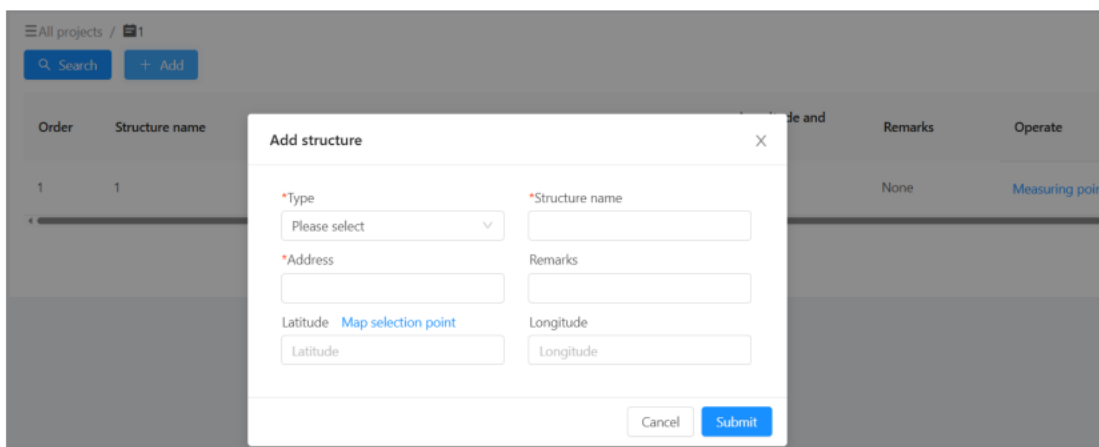


Figure 3-31


(3) Add Measuring Points: After the structures have been added, navigate to **Measuring points** (Figure 3-32) to enter the submenu, then click the **+ Add** button to create a new measuring point. Fill in the following fields:

- Type: Select either "Surface Displacement" or "Sensor". In most cases, "Surface Displacement" is used.
- Name: Usually the device ID.
- Solution type: Select "Front-end Calculation" or "Back-end Calculation". Typically, "Back-end Calculation" is used. "Back-end Calculation" means the receiver uploads data to the platform for processing,



whereas "Front-end Calculation" means the receiver independently performs differential calculations and then uploads the results. Front-end calculation generally takes longer than Back-end calculation.

- Solution engine: Choose "DEV-RTCM33", "RTCM33-MSM5", or "GM-RTCM3". Use "DEV-RTCM33" for 24-board receivers, and "RTCM33-MSM5" for non-24-board receivers (the "24" refers to the 8th and 9th digits of the device ID, counting letters).
- Observation station: Refers to a receiver at a location that may move.
- Base station: Refers to a receiver at a fixed location.
- Solution time interval: The time interval used for calculation data.
- Initial value filtering time: The data duration used to calculate the first differential result.
- Calculate the duration of data used: The amount of data used for each calculation.
- Filtering algorithm: Select "Smooth filter" or "Kalman filter". "Smooth filter" performs an additional averaging on each calculated result, with the number indicating the most recent data points used. "Kalman filter" estimates the optimal true value from noisy measurements.
- Resolving on the hour: Select "Close" or "Enable". Enabling this option starts calculations at the top of the hour.
- Coordinate transformation: Select the parameter conversion model.
- Remarks: Fill in any relevant notes based on the actual situation.

After completing all parameter entries, click  to save, as shown in Figure 3-16.

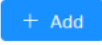
Note: This step is critical. Please contact the manufacturer's technical staff for guidance when configuring these settings.



Order	Structure name	Type	Address	Creation time	Longitude and latitude	Remarks	Operate
1	1	Building	1	2026-03-25 13:58:38	0° 0'	None	Measuring points Modify

Figure 3-32

Figure 3-33

(4) Configure Thresholds: After the measuring points have been added, you can create monitoring thresholds. Navigate to "Project Management" → "Structure List" → "Measuring Points List" → "Configure Thresholds" (Figure 3-17) to enter the monitoring threshold list page. Click the  button to create a new monitoring threshold,

then fill in the required fields: "Monitoring Attribute" and the warning thresholds for each level. Click **Submit** to save, as shown in the figure below.

Order	Name	Type	Alarm threshold	Solution type	Observation station & base station	Solution engine	Solution state	Solution time interval	Operation
1	1	Surface displacement	Close	Background solution	Z34291694000857 Z3437366400006	GM-RTCM3 License M Expired	Normal	1 Hour	Modify Threshold
2	27	Surface displacement	Close	Front-end solution	W56103634900027	-	Normal	-	Modify Threshold
3	03	Surface displacement	Close	Background solution	Z34393664000023 Z33443664000699	GM-RTCM3 License M Expired	Normal	1 Hour	Modify Threshold

Figure 3-34

Condition	Monitoring property	Level 1 alarm threshold (mm)	Level 2 alarm threshold (mm)	Level 3 alarm threshold (mm)	Operation
No Data					

Figure 3-35

Figure 3-36

Projects, structures, measuring points, and monitoring thresholds added in "Project Management" can all be modified or deleted. On the "All Projects" page,



projects can also be edited. As shown in Figure 3-37, click "Modify" to change the required fields "Project Information" and "Push Configuration".

In "Push Configuration", this refers to the method for transmitting calculation data, the monitoring cloud platform uses the HTTP protocol to push information and also supports custom protocol push. The information that can be pushed to the platform includes "Project Name", "Measuring Point Name", "Base Station ID", "Rover ID", "Calculation Time", "Start Time of Calculation Data", "End Time of Calculation Data", "Calculation Interval", "Rover ECEF Coordinates", "Base Station ECEF Coordinates", "Rover coordinates relative to the base station in NEU (North-East-Up)", and "Coordinate changes".

After completing the configuration, click Submit to save, as shown in the figure below.

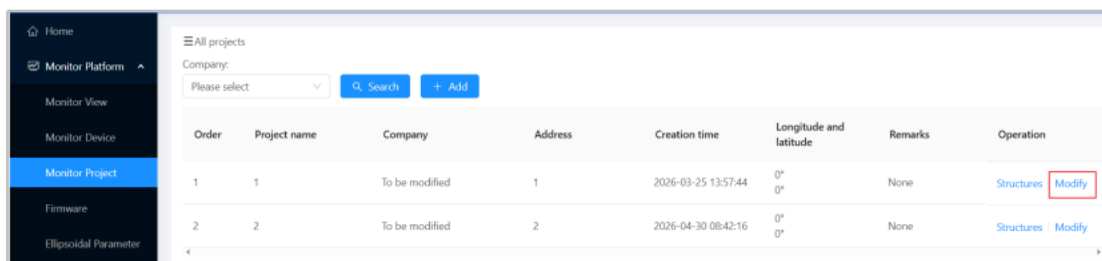


Figure 3-37

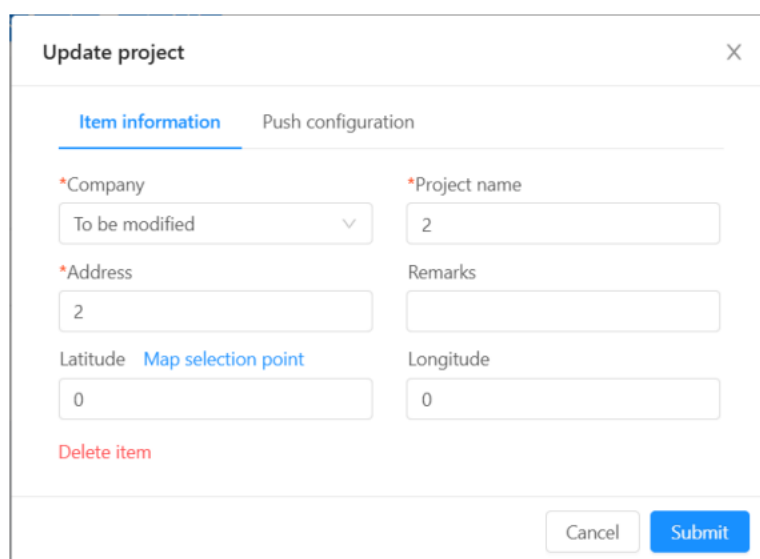


Figure 3-38



3.1.4 Firmware Management

The "Firmware Management" interface allows users to manage receiver firmware, including querying, uploading firmware, and upgrading host functions. After uploading firmware, bulk firmware upgrades for multiple hosts can be performed, as shown in the figure below .

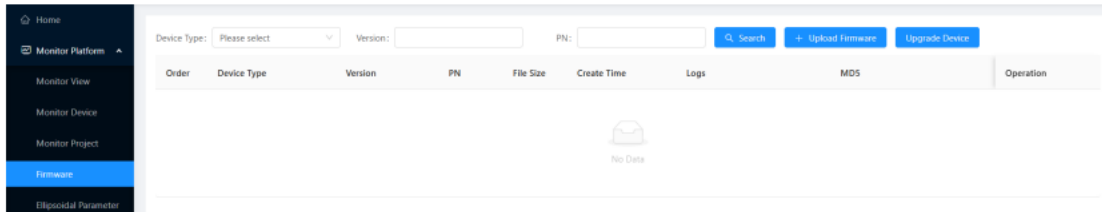


Figure 3-39

3.1.5 Ellipsoidal Parameter Management

The "Ellipsoidal Parameter Management" interface allows users to manage coordinate transformation parameters and ellipsoidal parameters, as shown in the figure below.

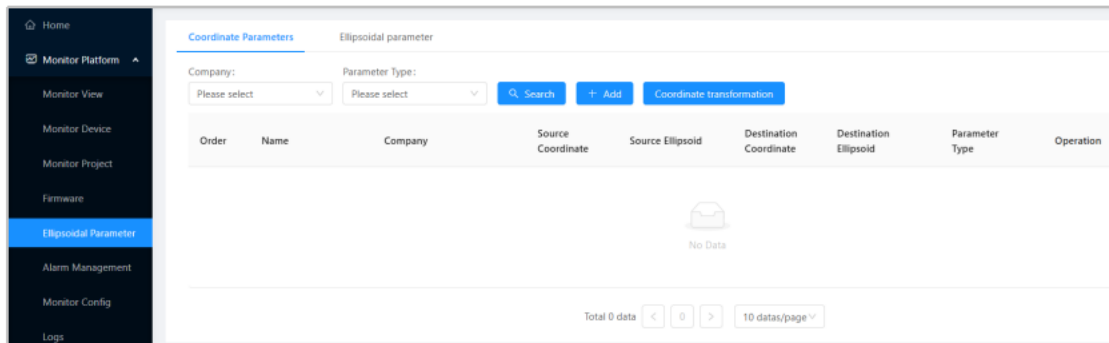


Figure 3-40

Add Transform Parameter ✕

<p>*Company <input type="text" value="To be modified"/></p> <p>*Source Coordinate <input type="text" value="Please select"/></p> <p>*Destination Coordinate <input type="text" value="Please select"/></p> <p>*Parameter Type <input type="text" value="Please select"/></p>	<p>*Name <input type="text"/></p> <p>*Source Ellipsoid <input type="text" value="Please select"/></p> <p>*Destination Ellipsoid <input type="text" value="Please select"/></p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Figure 3-41



Order	Company	Name	Major Semi Axis(m)	Minor Semi Axis(m)	Operation
1	Common	WGS84	6378137	6356752.314245179	Modify Delete
2	Common	XIAN80	6378140	6356755.288157528	Modify Delete
3	Common	BEGINS4	6378245	6356863.018773047	Modify Delete
4	Common	CGCS2000	6378137	6356752.314140356	Modify Delete

Figure 3-42

3.1.6 Alarm Management

The "Alarm Management" interface is used to centrally manage all system alarms. It includes Member Management, Alarm Message Templates, Sensor Alarm Configuration, and Sensor Alarm Records. The operation steps are as follows:

- (1) Configure Alarm Message Templates: In "Alarm Message Template" management, you can add or modify alarm templates based on template name, template type, template use, and text type. Template types include E-mail, WeChat Official Account, Alibaba Cloud SMS, and Webpage. Click "Use default values" to quickly populate the text content. Navigate to "Alarm Management" → "Alarm Message Template" to add a template, as shown in the figure.

Order	Template name	Template use	Notification method	Owned company	Template id	Operation
+	1	倾斜告警	Monitoring alarm	E-mail	To be modified	Modify Delete

Figure 3-43



Add template ✕

***Owned company**

***Template use**

***Content**

Alarm level: Alarm level

Alarm content: Alarm parameter name changes, and the threshold is Alarm threshold mm

Alarm value: Alarm value mm

Alarm location: Project name - Structure name - Station name

Acquisition device: Acquisition device serial number

Acquisition device name:

Alarm level:

Alarm type:

***Template name**

***Template type**

Use default values

Figure 3-44

(2) Add Members: Navigate to "Alarm Management" → "Member Management" to add alarm projects or measuring points, select the alarm methods (E-mail, SMS, WeChat), and specify the notified members. Note that you must configure a template in step 1 before selecting it when adding an alarm group, as shown in the figure.

- Home
- Monitor Platform
- Monitor View
- Monitor Device
- Monitor Project
- Firmware
- Ellipsoidal Parameter
- Alarm Management

Member management
Alarm template
Sensor Config
Sensor Alarm Record

Company:

Order	Company	Association type	Alarm type	Notification method	Notify members	Operation
1	To be modified	Project*1	Monitoring alarm	Close	1 items	Modify Delete

Total 1 data < 1 > 10 datas/page

Figure 3-45



Add alarm group X

*Company
To be modified ▼

*Alarm type
Monitoring alarm ▼

*Web page notification
Close ▼

*Mail notification
Close ▼

*Wechat wechat official account notification
Close ▼

*Sms notification
Close ▼

*Association type
Project ▼

*RelativeProject

*Notify members

Cancel Submit

Figure 3-46

(3) Configure the System: Open "Common" → "System Config" → "Mail service configuration", "Wechat service configuration", or "Alibaba Cloud SMS Configuration" to configure the system. Fill in the required fields. Typically, email alarms are used because configuring email is convenient, whereas WeChat and Alibaba Cloud SMS alarms require purchasing or applying for the corresponding services. The email configuration interface is shown in Figure 3-47.

- Sending email type: Select the type of email.
- SMTP mail server: Follow the format `smtps://smtp.xxx.com`.
- Port: 465
- Email account: `xxxx@xxx.com`
- Email password: Use the SMTP authorization code for the email account. For detailed configuration instructions, refer to: <https://zhuanlan.zhihu.com/p/551399559>

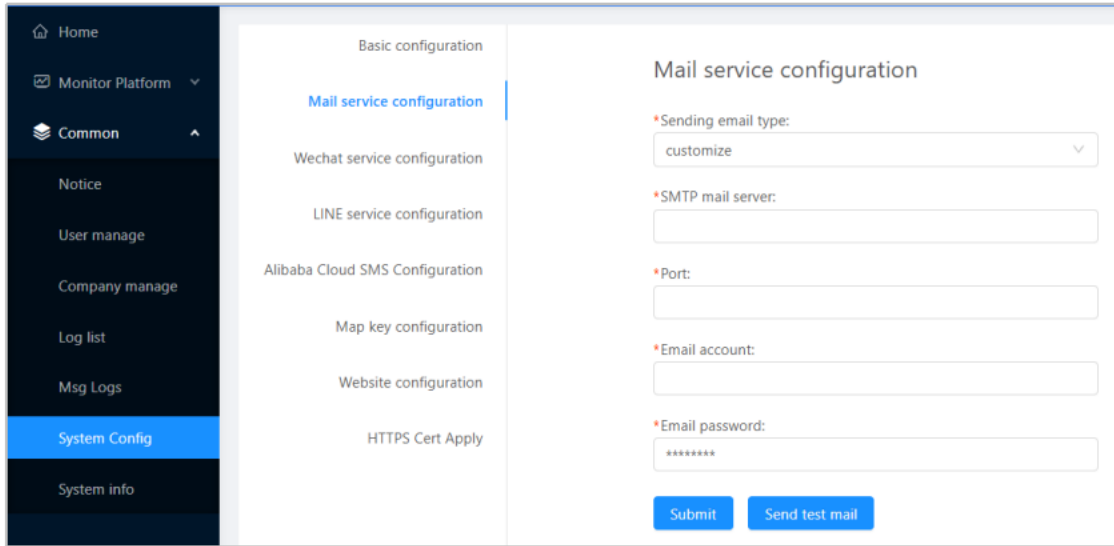


Figure 3-47

3.1.7 Monitor Configuration

(1) Basic Configuration: This mainly involves configuring the content of the data received and stored by the server, as shown in Figure 3-48.

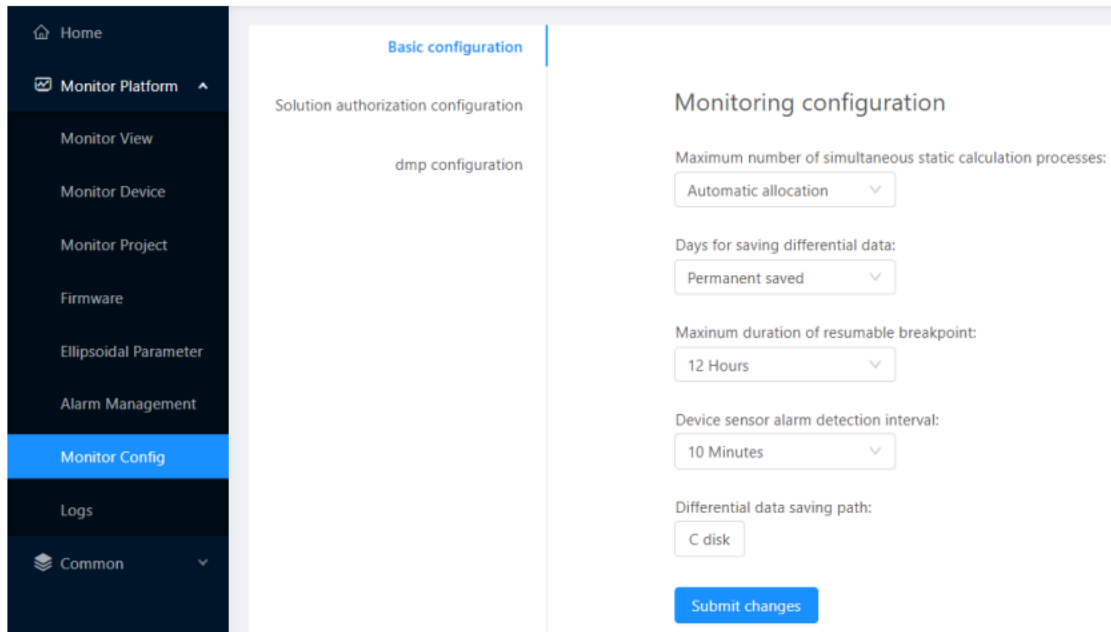


Figure 3-48



(2) Solution Authorization Configuration (Key Step):

Click "Generate pre-authorization file" → "Select from the list of devices" to choose the hosts to authorize, then click "Submit". After the pre-authorization file is generated, send it to the technical support team to create a "license.dat" file, and once received, click

Upload solution authorization file

to complete the authorization process.

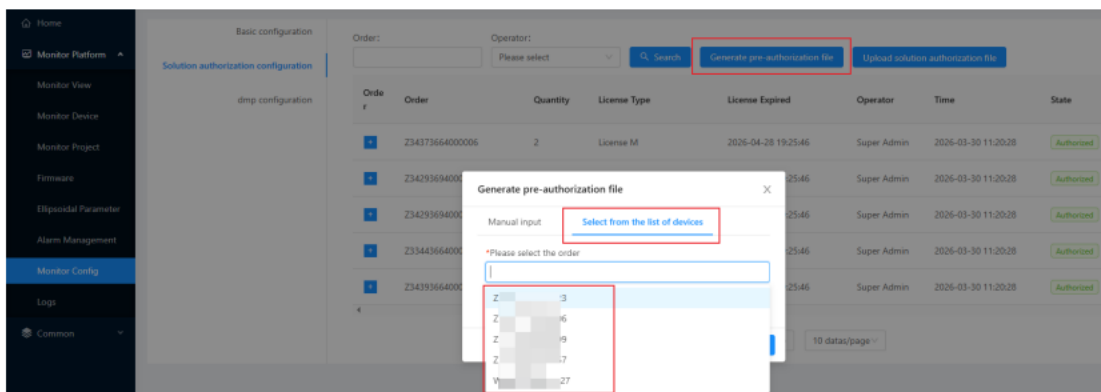


Figure 3-49

(3) DMP Configuration:

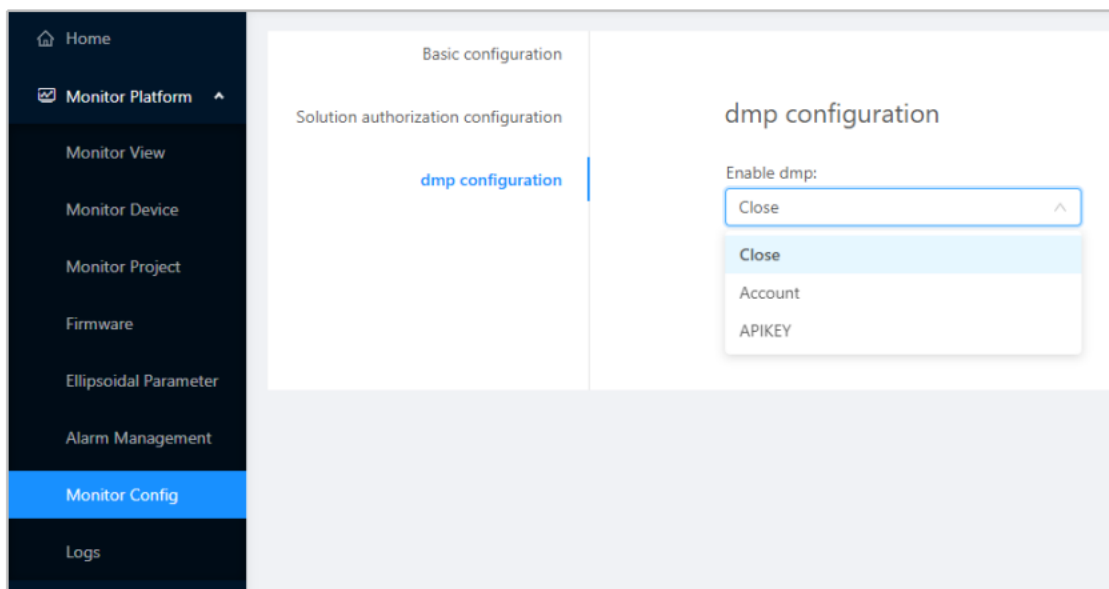


Figure 3-50



3.1.8 Logs

The "Operation Log" interface provides full-process user activity auditing and operation traceability. It records and allows querying detailed information for all critical actions within the system, providing a reference for device management and troubleshooting, as shown in the figure below.

The operation type filter includes: "Add", "Modify", "Delete", "Device Registration", "Device Configuration", "Set Recalculation", "Set Initial Calculation Value", "Delete Calculation Results", "Generate Solution Authorization File", and "Upload Solution Authorization File".

The operation target filter includes: "Device", "Project", "Structure", and "Measuring Point".

Order	Operating time	Source	User	Company	Operation type	Operation object	Device information	Item information	Operation
1	2026-05-08 09:48:54	121.32.157.96	Super Admin	To be modified	Deletion	Project	None		Parameter details
2	2026-05-08 09:48:42	121.32.157.96	Super Admin	To be modified	Add	Measuring point	None		Parameter details
3	2026-05-06 16:27:04	121.32.157.96	Super Admin	To be modified	Update	Device			Parameter details
4	2026-05-06 16:16:31	121.32.157.96	Super Admin	To be modified	Update	Device			Parameter details
5	2026-05-06 13:35:53	121.32.157.96	Super Admin	To be modified	Add	Measuring point	None		Parameter details
6	2026-05-06 12:00:45	121.32.157.96	Super Admin	To be modified	Add	Structure	None		Parameter details
7	2026-05-06 11:59:54	121.32.157.96	Super Admin	To be modified	Add	Project	None		Parameter details

Figure 3-51



3.2 Common Management

3.2.1 Notice

Navigate to the "Notice" page to view detailed alarm notifications, as shown in Figure 3-52.

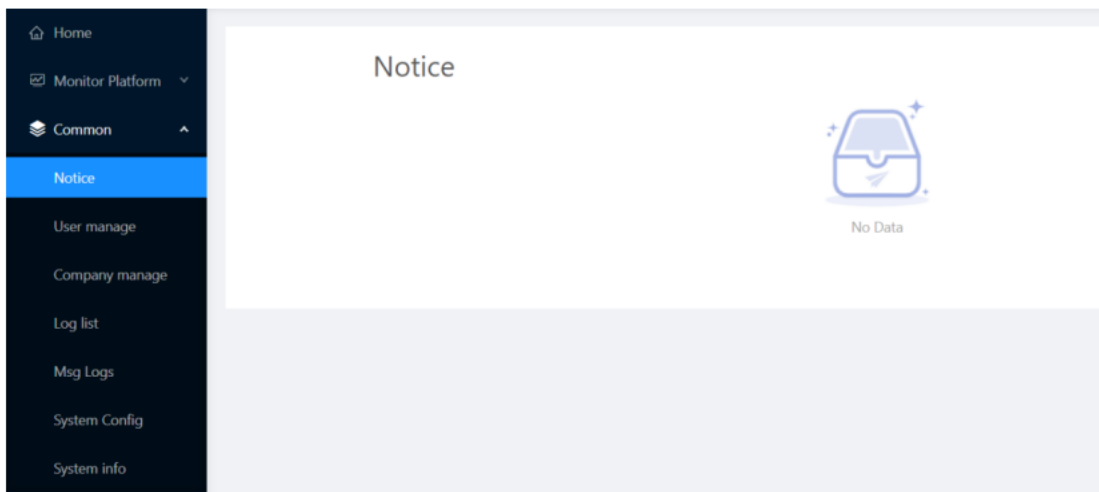


Figure 3-52

3.2.2 User Management

Navigate to the "Use rmanage" page to add new users and assign access permissions. Click the **+ Add** button to enter user information. You can also modify, deactivate, reset passwords, or delete users, as shown in Figure 3-53.

Click **Modify** to assign different permissions to a user, such as access to "Monitor Platform" functions or "Common" module functions, as shown in Figure 3-54.

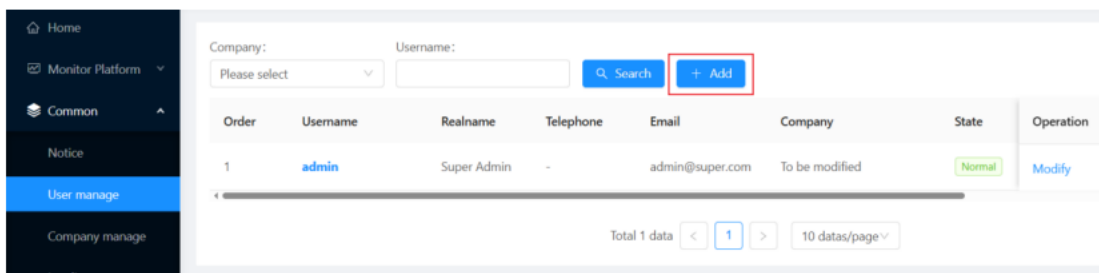


Figure 3-53



Figure 3-54

3.2.3 Company Management

Navigate to the "Company manage" page to add or modify company information, such as setting the number of monitoring devices that can be accessed, as shown in Figure 3-55.

Figure 3-55



3.2.4 Log List

Navigate to the "Log list" page. The log list records system operation activities and allows querying by user, company, log type, and start date. It displays the operation history of users, as shown in Figure 3-56.

Order	Time	Source	User	Log type	Desc
1	2026-05-08 09:46:57	1	Super Admin	Sign in	User General\1-admin-Super Admin-C(1-To be modified), login successful, time since last login: 0 days 19 hours 30 minutes 45 seconds
2	2026-05-07 14:23:57	1	Super Admin	Sign out	User General\1-admin-Super Admin-C(1-To be modified) logout successful
3	2026-05-07 14:16:11	1	Super Admin	Sign in	User General\1-admin-Super Admin-C(1-To be modified), login successful, time since last login: 0 days 0 hours 2 minutes 42 seconds
4	2026-05-07 14:13:29	1	Super Admin	Sign in	User General\1-admin-Super Admin-C(1-To be modified), login successful, time since last login: 0 days 0 hours 3 minutes 1 second
5	2026-05-07 14:10:27	1	Super Admin	Sign in	User General\1-admin-Super Admin-C(1-To be modified), login successful, time since last login: 0 days 4 hours 49 minutes 46 seconds
6	2026-05-07 09:20:41	1	Super Admin	Sign in	User General\1-admin-Super Admin-C(1-To be modified), login successful, time since last login: 0 days 0 hours 15 minutes 58 seconds
7	2026-05-07 09:04:43	1	Super Admin	Sign in	User General\1-admin-Super Admin-C(1-To be modified), login successful, time since last login: 0 days 17 hours 15 minutes 34 seconds

Figure 3-56

3.2.5 Message logs

Navigate to the "Msg Logs" page. The message logs record the system alarm notifications and allow querying by company, sending module, message type, and start date. Click "Search" to view the specific warning content, as shown in Figure 3-57.

Order	Time	Company name	Send Module	Title	Message Type	Msg Content
No Data						

Total 0 data < > 10 data/page

Figure 3-57



3.2.6 System Configuration

- (1) Basic Configuration: Navigate to the "System Config" page and click "Basic configuration" to access the basic settings. Here, you can add or modify items such as the "ICP Registration Number", "Copyright", "Login Page Title", and "Login Page Logo", as shown in Figure 3-58.

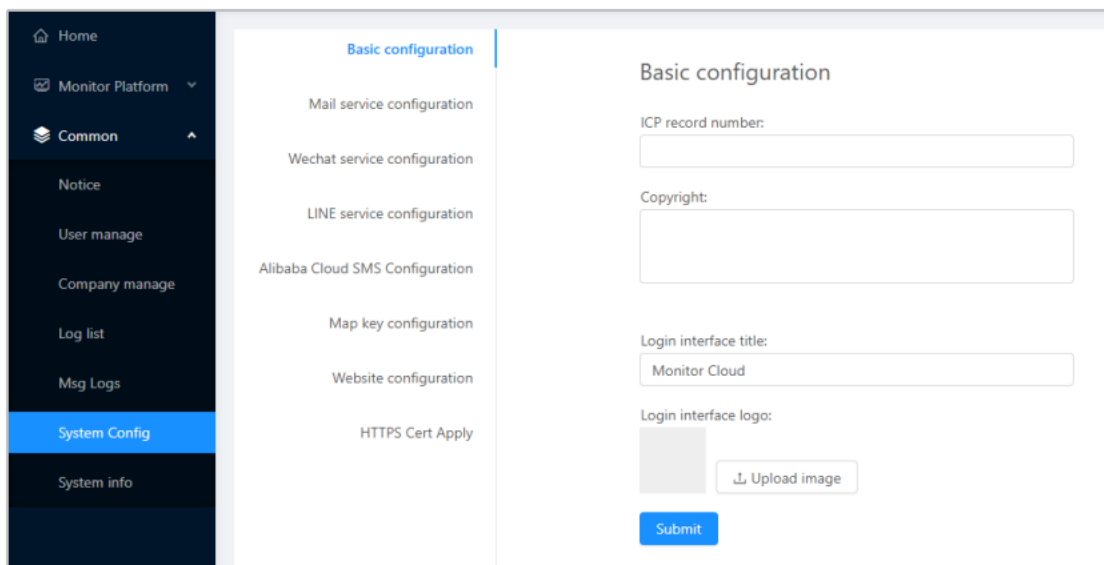


Figure 3-58

- (2) Mail Service Configuration: Navigate to the "System Config" page and click "Mail service configuration" to configure mail settings. The configuration includes "Sending email type", "SMTP mail server URL", "Port", "Email account", and "Email password", as shown in Figure 3-59.

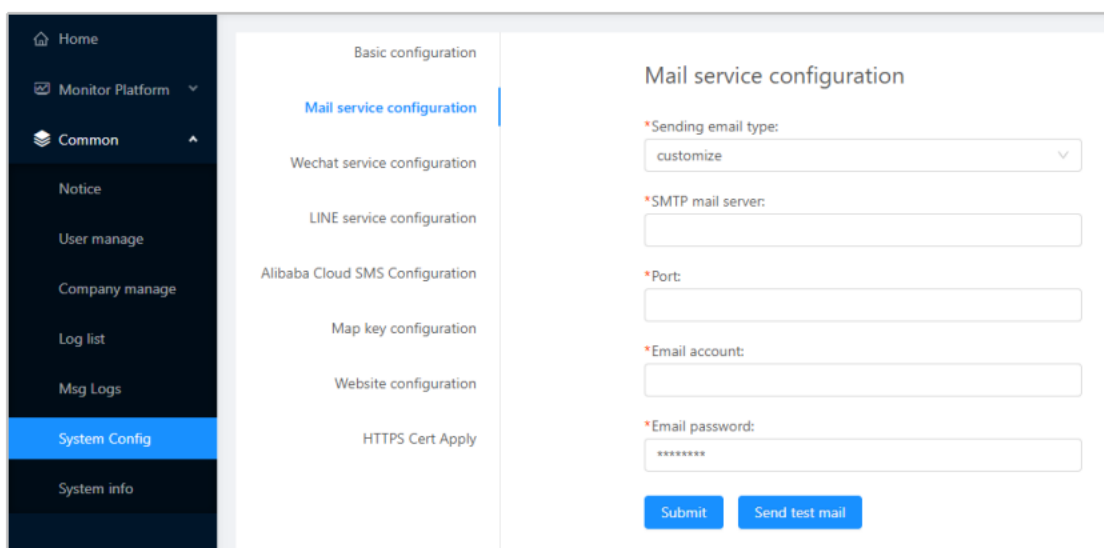


Figure 3-59



(3) Wechat Service Configuration: Navigate to the "System Config" page and click "Wechat service configuration" to set up the WeChat service, as shown in Figure 3-60.

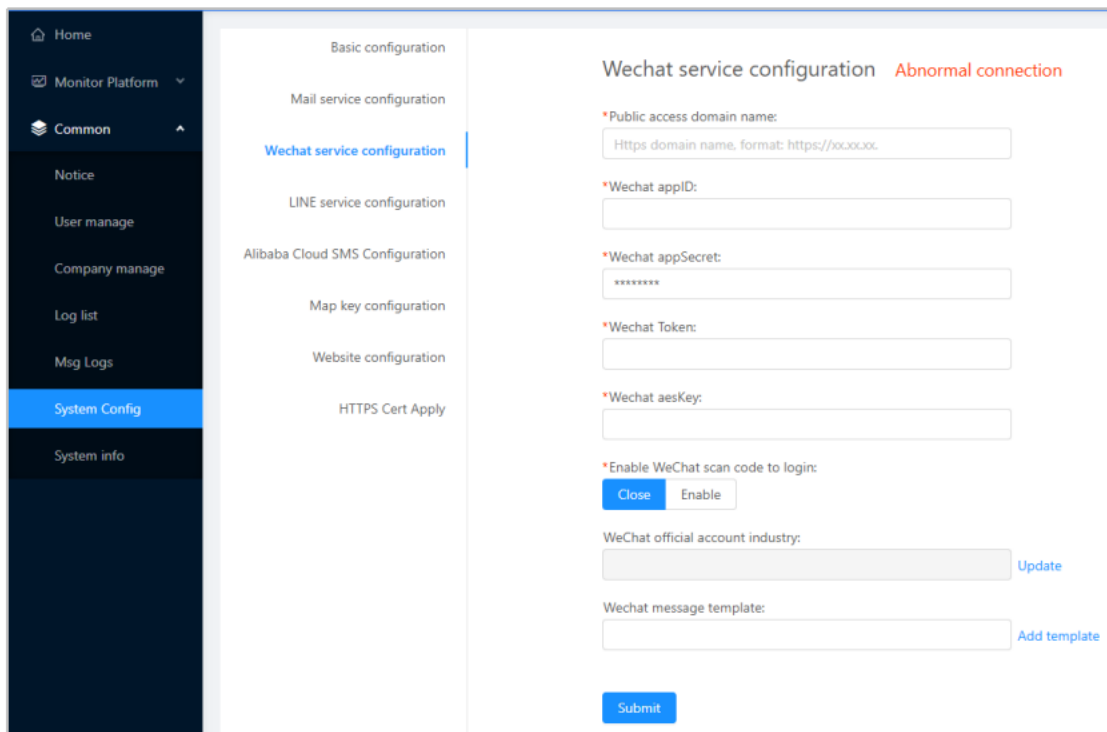


Figure 3-60

(4) LINE service configurator:

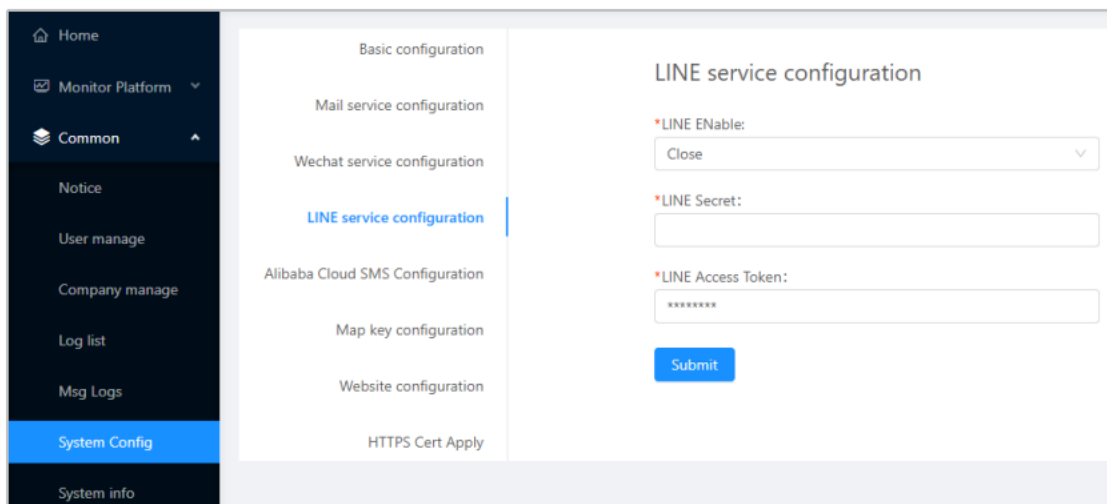


Figure 3-61



- (5) Alibaba Cloud SMS Configuration: Navigate to the "System Config" page and click "Alibaba Cloud SMS Configuration" to configure the Alibaba Cloud SMS service, as shown in Figure 3-62.

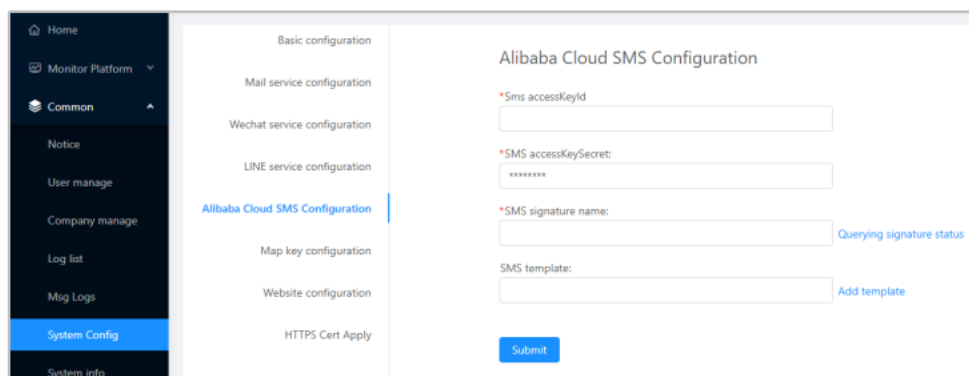


Figure 3-62

- (6) Map Key Configuration: Contact the provider of the map service in use to apply for and obtain the corresponding map key for system configuration.

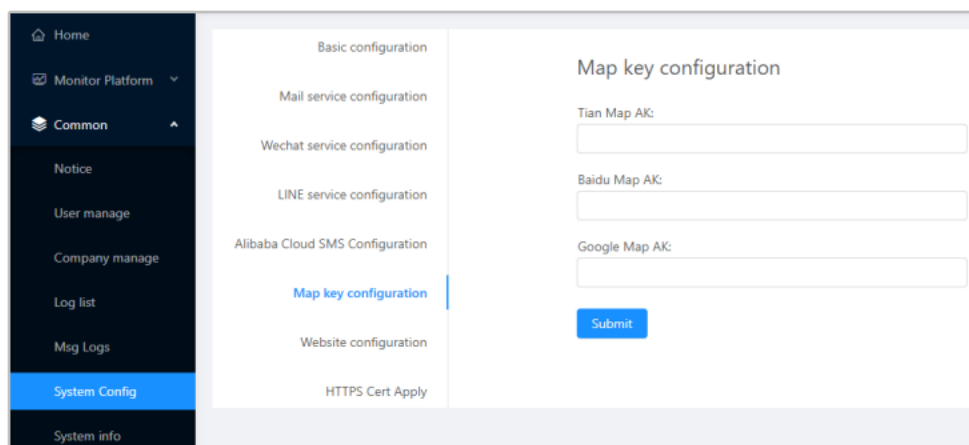


Figure 3-63

- (7) Website Configuration: Configure the settings for the Monitoring Cloud website.

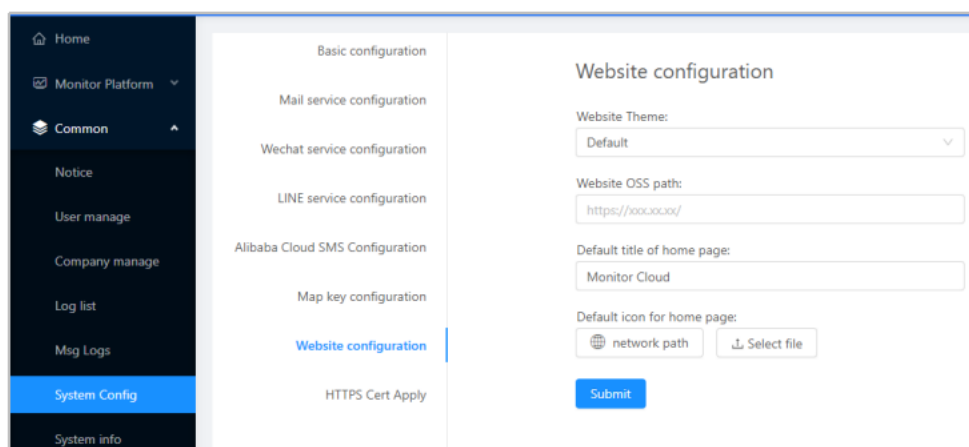


Figure 3-64



(8) HTTPS Certificate Application: Apply for an HTTPS certificate.

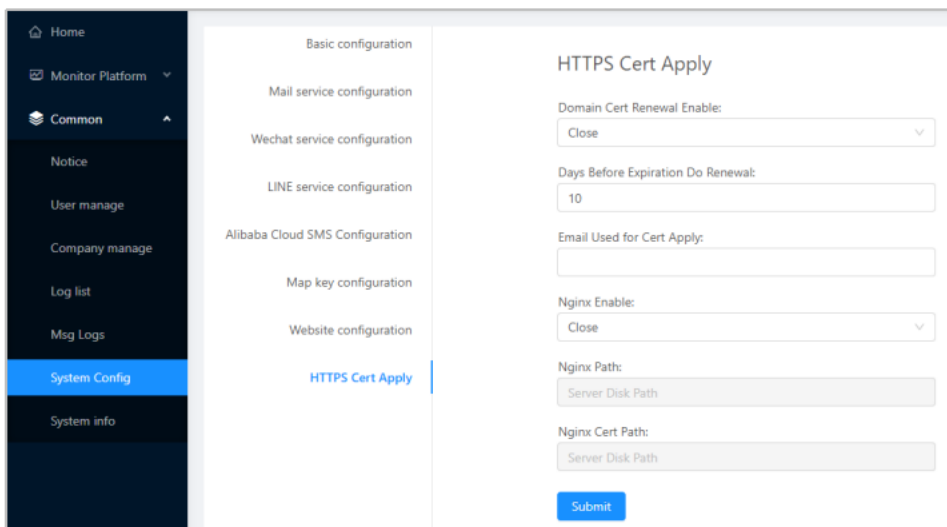


Figure 3-65

3.2.7 System Info

The "System info" page includes license information, system plugin information, and system upgrade functionality.

(1) License Information: To authorize the installed system, first click the **Download PC-INFO** button, as shown in Figure 3-66, to download the license request file "pc.info" and submit it to the technical support team. After receiving the license file, click **Upload license file** to complete the license authorization, as shown in the figure.

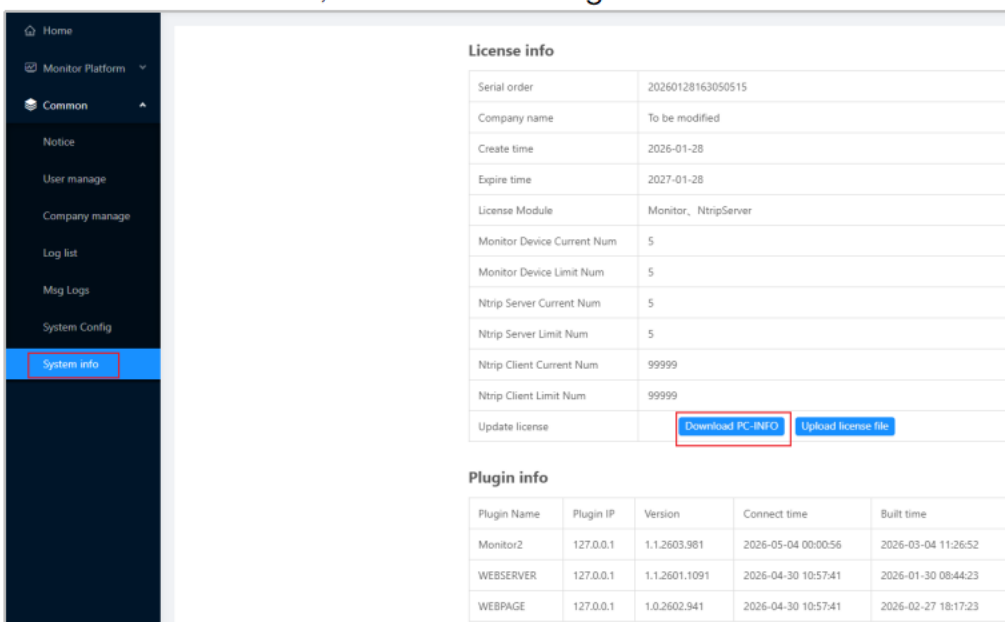


Figure 3-66

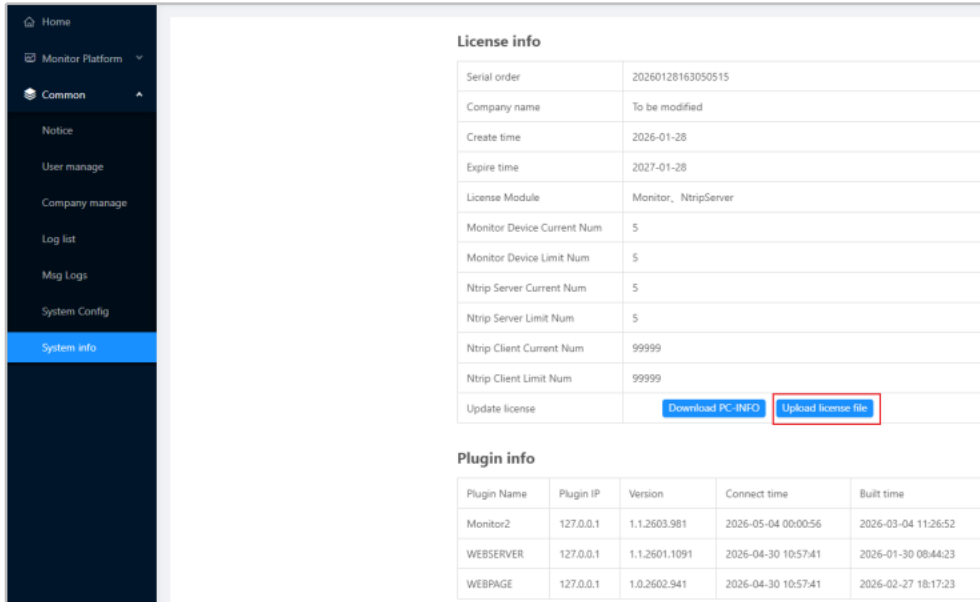


Figure 3-67

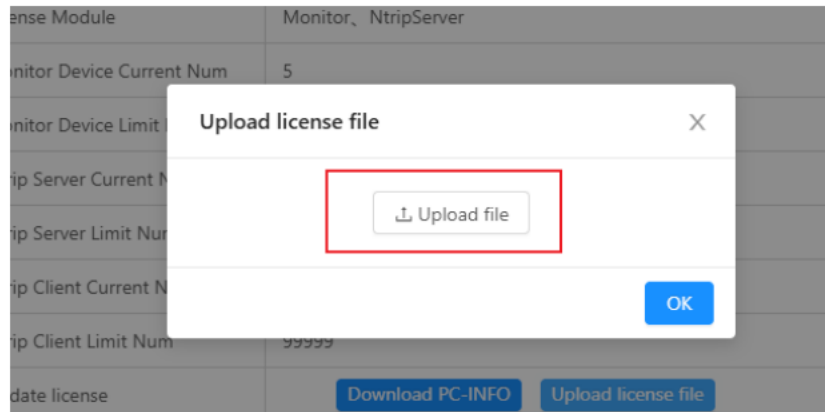


Figure 3-68

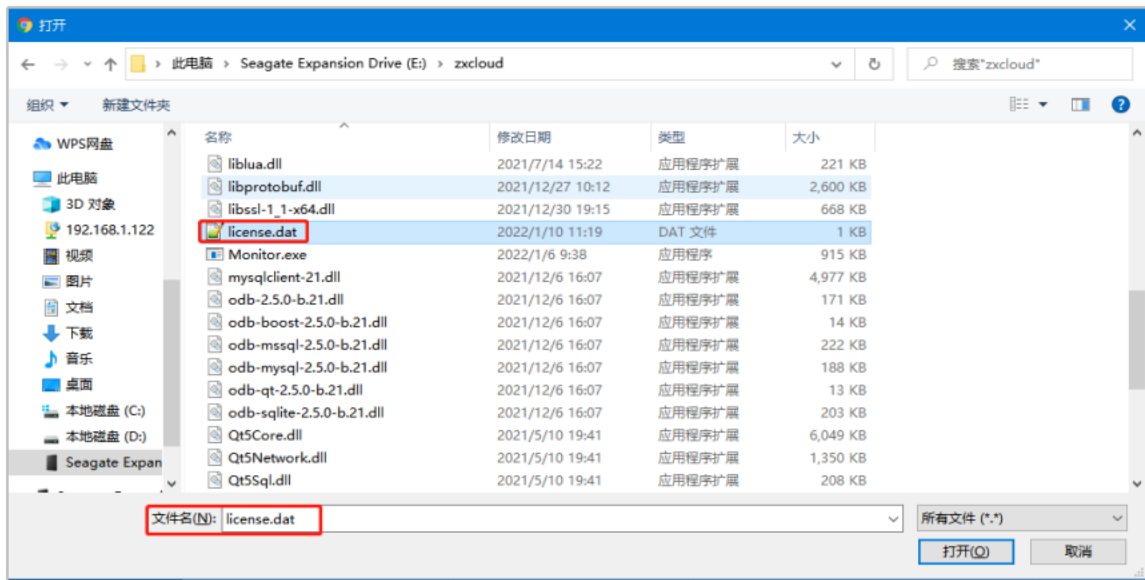


Figure 3-69

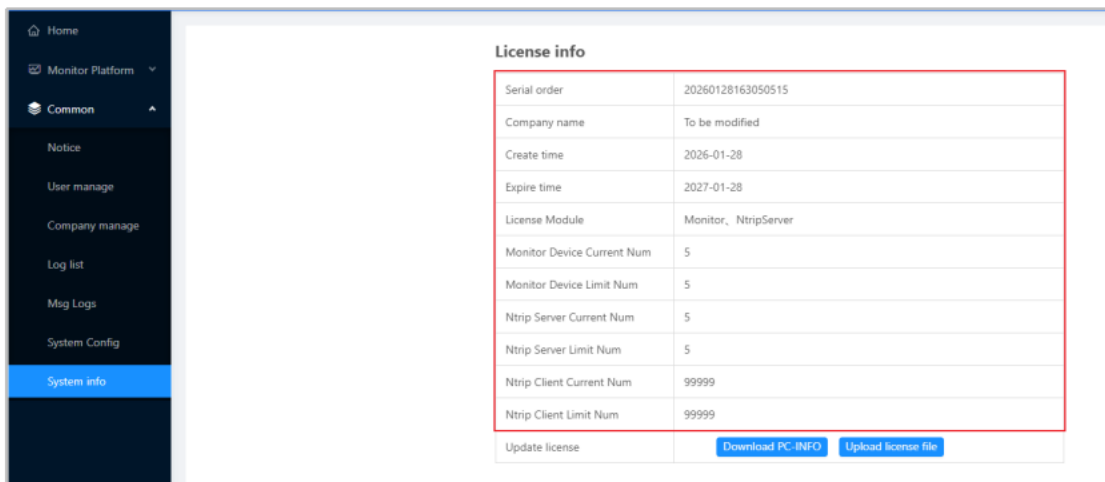


Figure 3-70

(2) Plugin Information: The "Plugin info" section displays the current plugin name, plugin IP, version, connection time, and build time, as shown in Figure 3-71.

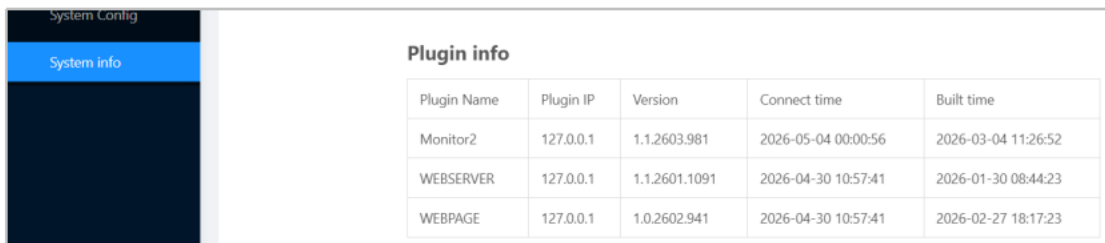


Figure 3-71

(3) System Upgrade: The system upgrade function allows updating the relevant plugins. Click the [System upgrade](#) button and select the corresponding firmware version, as shown in the figure.

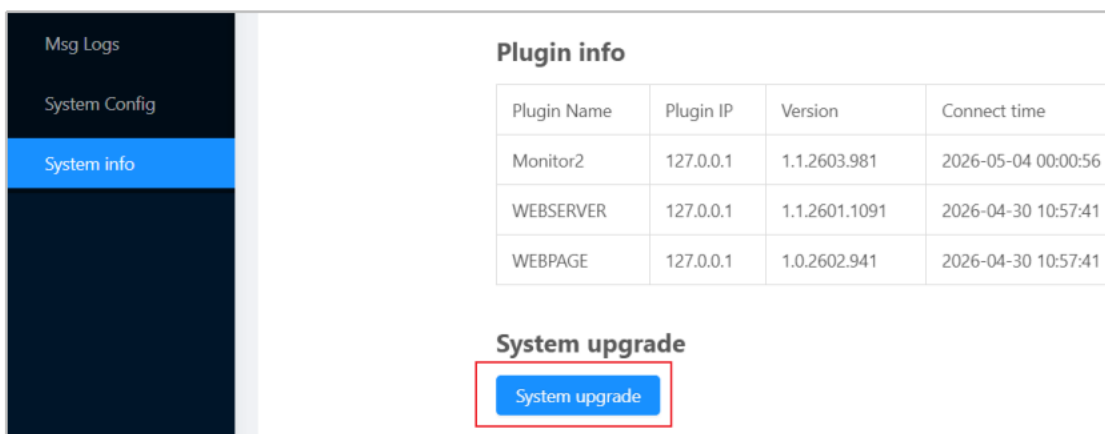


Figure 3-72

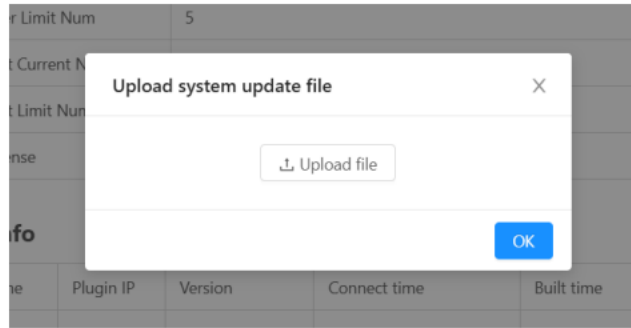


Figure 3-73

3.2.8 Create a New Admin Use

To use the functions of the "Monitor Platform", a new administrator user must be created. The default initial user "admin" only has the permission to create users; the newly created administrator user will have full access to the "Monitor Platform" functions.

- (1) Navigate to "Common" → "Usermanage" page, click the **+ Add** button, enter the user information ("Username", "Realname", "Telephone", "Email", "Company"), and then click **Submit**, as shown in Figure 3-75.

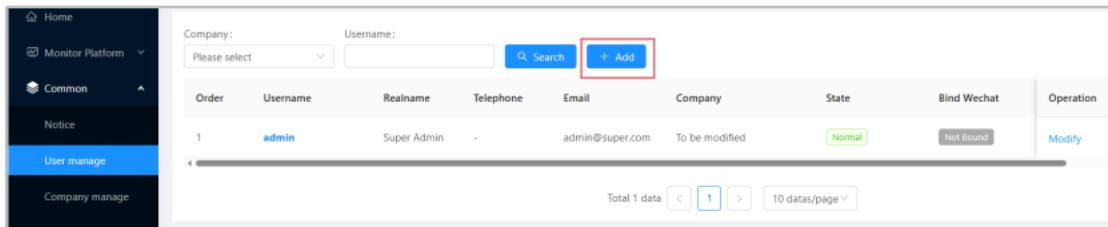


Figure 3-74

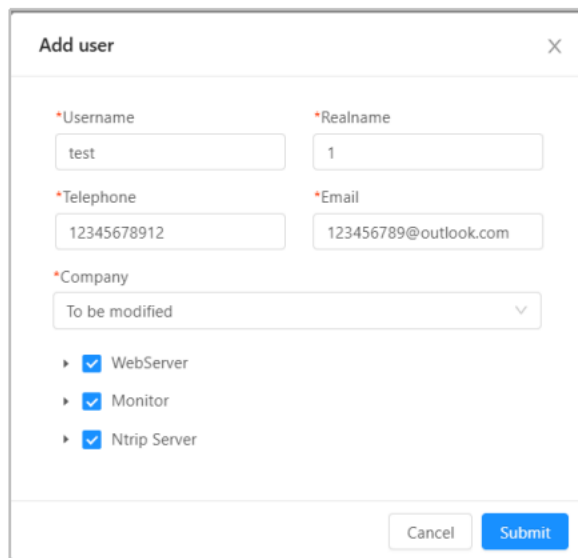


Figure 3-75



(2) After adding a user, the password needs to be initialized. On the login page, enter the "Username" and any password, then click "Sign in". A dialog will appear prompting you to set the initial password, as shown in the figure.

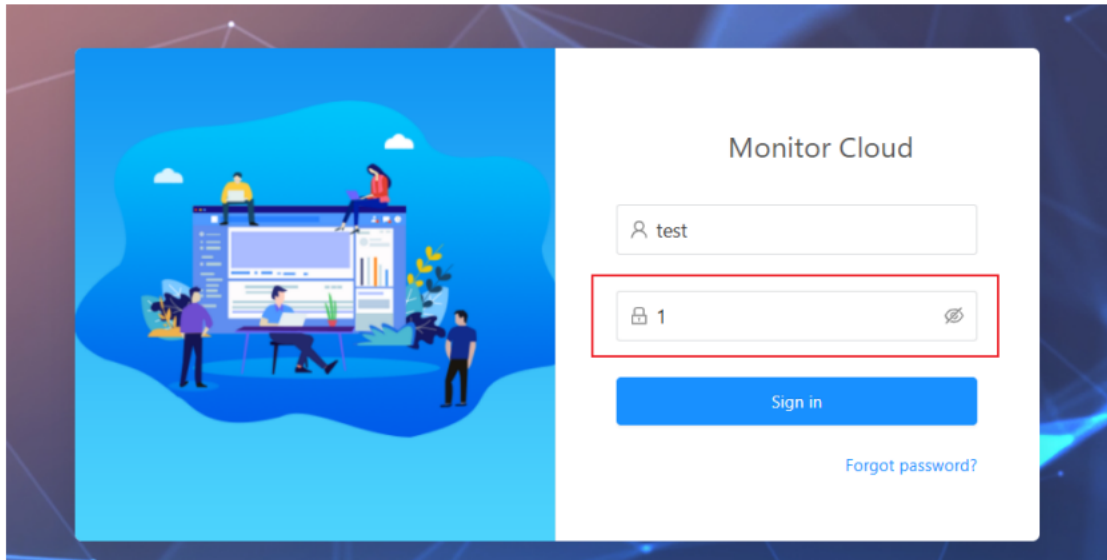


Figure 3-76

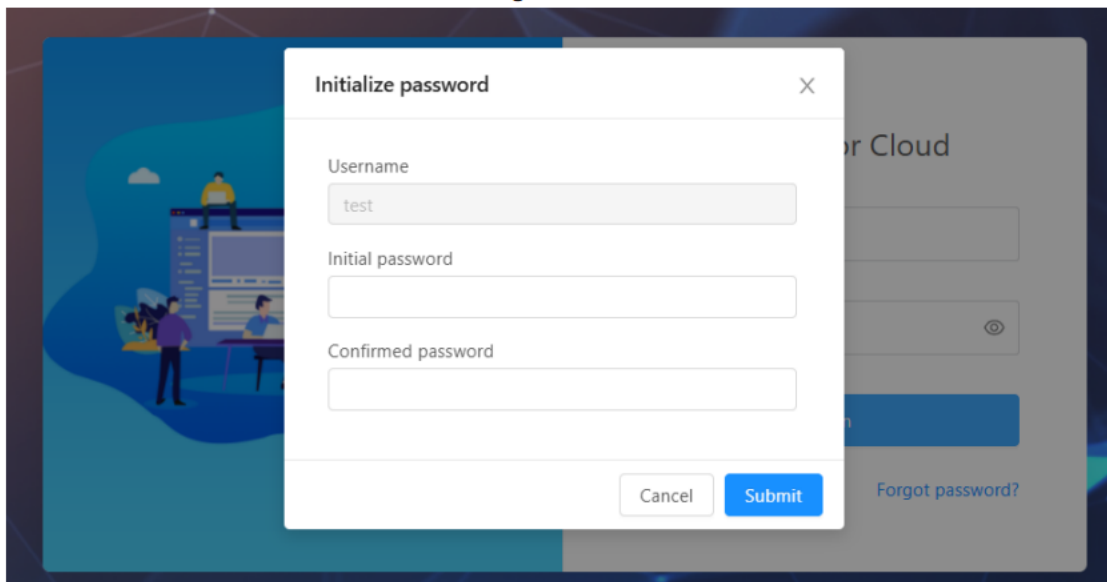


Figure 3-77



4 Application of the Monitoring Cloud Platform (Example Using M6 Receiver)

4.1 Device Page Settings

4.1.1 Set Base Station Mode

Navigate to "GNSS Config" under "GNSS" in the menu, then set the "GNSS Mode" to "Base" (choose fixed coordinates or dynamic coordinates according to your needs), as shown in the figure.

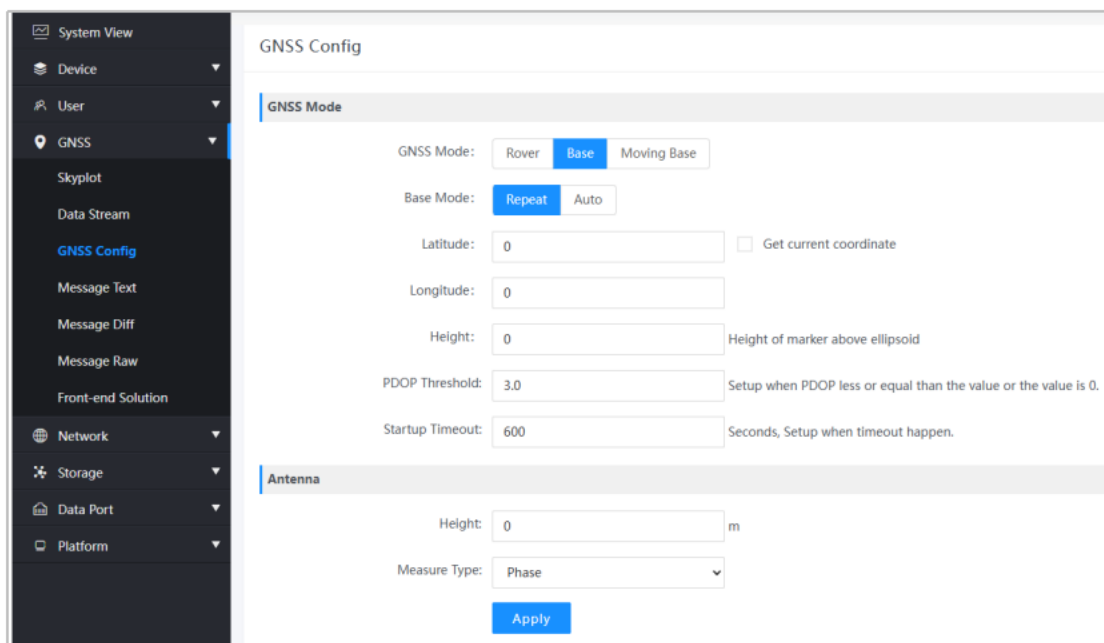


Figure 4-1



4.1.2 Configure Differential Output

Navigate to "Data Stream" under "GNSS", then go to "Differential Output". Select the required message outputs, enable the sensor messages, and finally click "Apply", as shown in the figure.

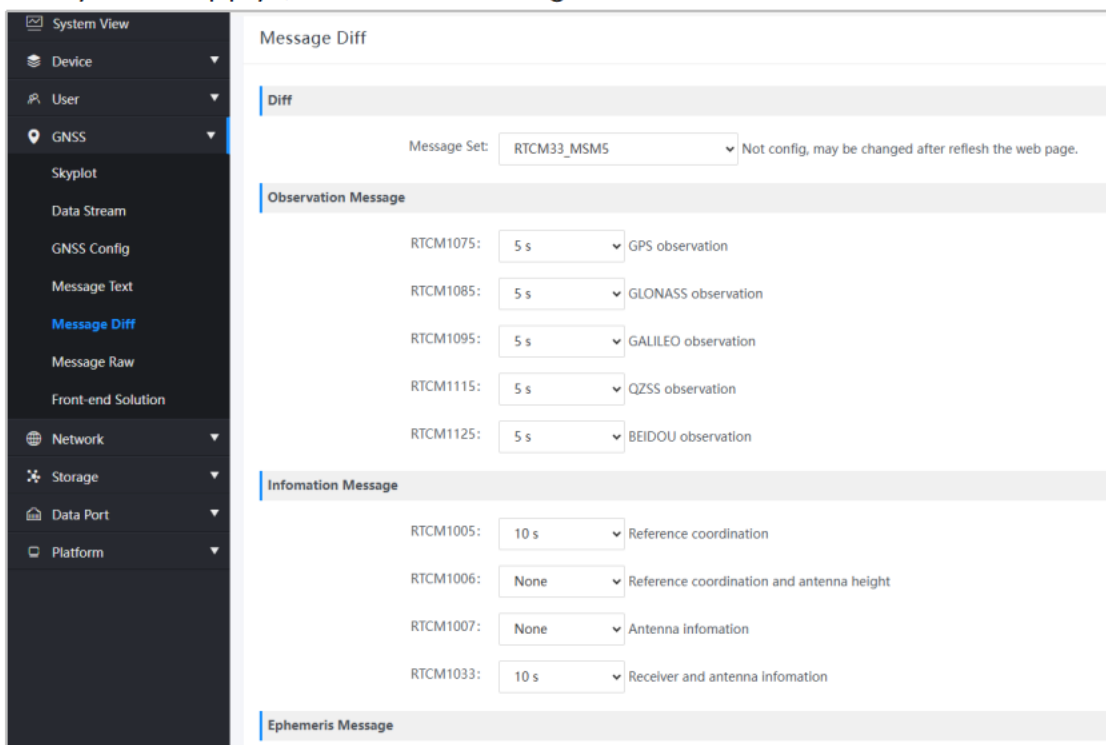


Figure 4-2

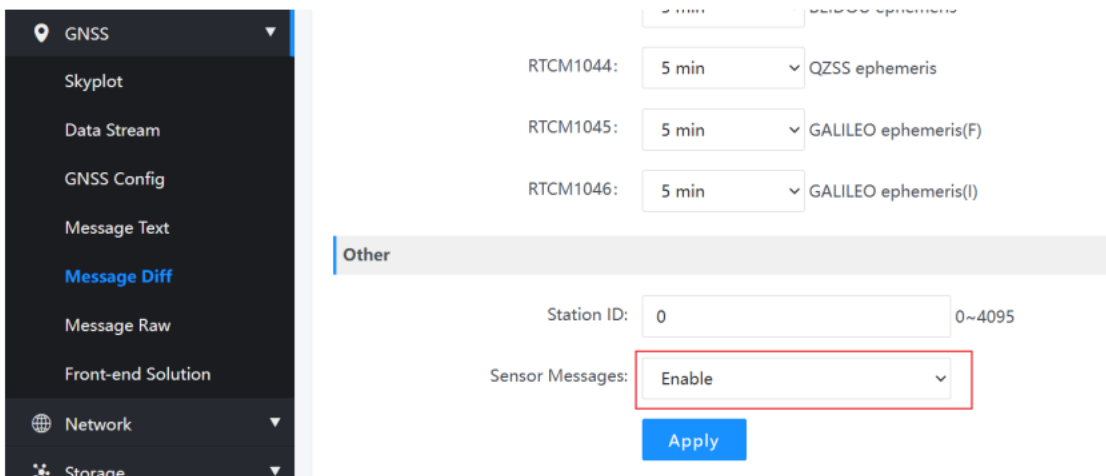


Figure 4-3



4.1.3 Configure Ntrip Server

Navigate to "Data Port" → "Ntrip Server".

- Select the Ntrip protocol version: "Ntrip/1.0" or "Ntrip/2.0".
- Host: Enter the IP address of the "Monitoring Cloud Platform" server.
- Port: Typically set to 8882 (adjust according to your company 's configuration).
- Mount Point: Must match the receiver serial number.
- Username and Password: Generally can be "user"; if a specific account is set, enter the designated credentials.
- Data: Select "Message Diff" for differential positioning data.
- Heartbeat Timeout: Set to "Disable".

Finally, click "Apply" to enable the Ntrip Server, as shown in the figure.

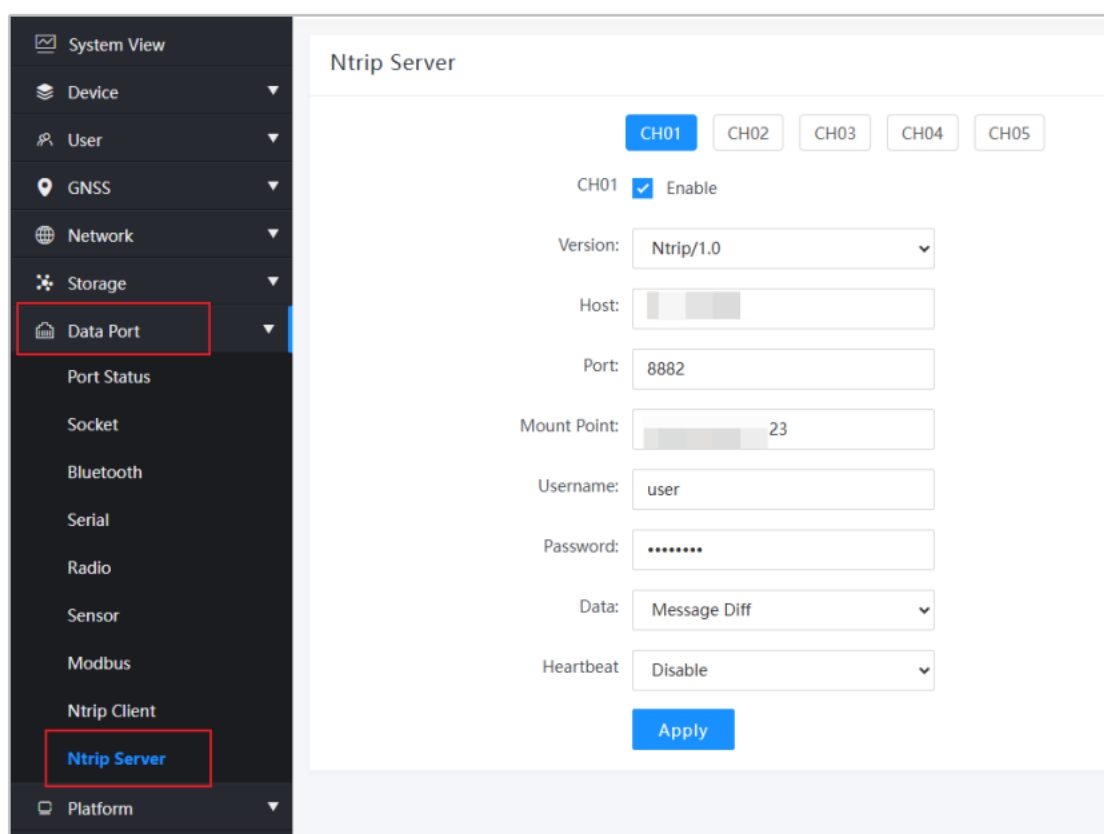


Figure 4-4



4.1.4 Configure Sensors

Click "Data Port" → "Sensor" and set the switch to "Enable".

In "Sensor Type", select "Inner Sensor", click "Add", and then click "Apply".

After the page refreshes, select the corresponding built-in sensor, click "Configuration" to enter the sensor parameter configuration page, check "Enable", and click "Apply" to complete the sensor setup, as shown in the figure.

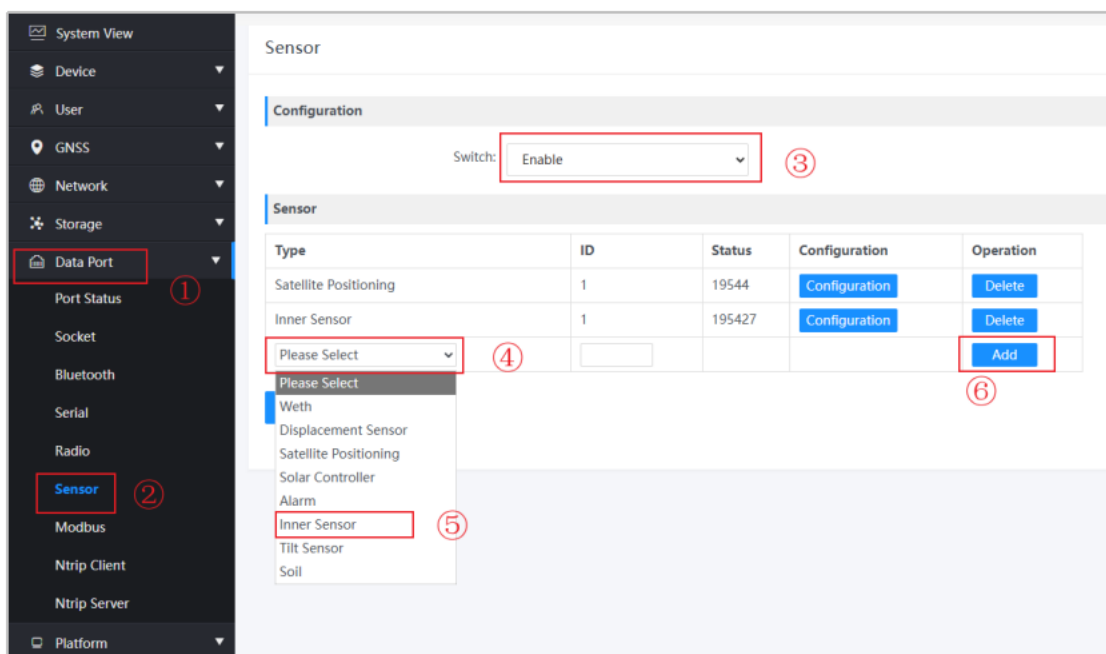


Figure 4-5

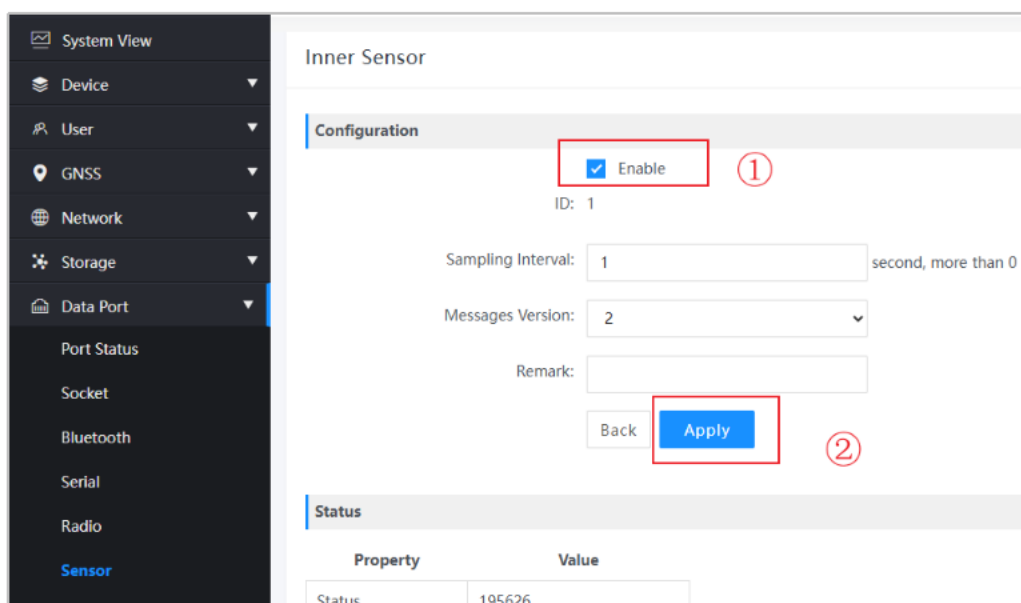


Figure 4-6



4.1.5 Check Port Status

Navigate to "Data Port" → "Port Status" to verify if the connection is operating normally. If it shows "Running", the connection is established, as shown in the figure.

Note: For a newly powered-on device sending data to the server for the first time, the server may occasionally reject the connection. The receiver will automatically retry, and "Connection Failed" may appear temporarily. In this case, please wait until the connection is established.

Port	Status	Transmit	Receive
Socket01	Disable		
Socket02	Disable		
Socket03	Disable		
Socket04	Disable		
Socket05	Disable		
NtripServer01	Running	194 B/s	
NtripServer02	Disable		
NtripServer03	Disable		
NtripServer04	Disable		
NtripServer05	Disable		
NtripClient	Running		938 B/s
Bluetooth	Disable		
Radio1	Enable	0 B/s	0 B/s
Radio2	Disable		
Radio3	Disable		

Figure 4-7

4.2 Monitoring Cloud Platform Settings

4.2.1 Add Device

Log in to the "Monitoring Cloud Platform" → "Device Manage" → "Add Device". Click "Add" and fill in the required information.

Note: The "Device Serial Number" must match the mount point configured in section 4.1, and the "Model" should match the actual receiver model.

After adding, you can check whether the device is online (the indicator next to the serial number shows green when online, gray when offline) and view detailed information, as shown in the figure.



Order	SN	Model & equipment name	Connection time	Data update time	Data today	Upload time interval	Satellite number	Company	Operation
1	023	U6	2026-05-07 14:18:59	1970-01-01 08:00:00	11.12MB	-1s	0	To be modified 1/1/03	Modify Details Sensor
2	026	U6	2026-05-09 03:27:01	2026-05-09 15:21:47	49.94MB	1s	42	To be modified 1/1/1	Modify Details Sensor
3	099	U6	2026-05-09 11:49:37	2026-05-09 12:30:07	1.68MB	5s	45	To be modified 1/1/03	Modify Details Sensor
4	157	U6	2026-04-02 20:12:56	2026-04-02 20:14:00				To be modified 1/1/1	Modify Details Sensor
5	027	U6 27						To be modified 1/1/27	Modify Details Sensor

Total 5 data < 1 > 10 data/page

Figure 4-8

Add device

*Company: *SN: 0 [Add multiple orders](#)

*Device name: *Model:

*Manufacturer: *Address:

Username Password

Remarks:

Figure 4-9

Host status

< [Host status](#) [Satellite information](#) [Connection record](#) H >

SN	Z[redacted]99
Host ip	111.55.205.51
Type	DW DDM-1/U6-FMW3.1.190.2603.806
Received data type	Ephemeris: 1019, 1020, 1042, 1044, 1045, 1046
	MSM: 1075, 1085, 1095, 1115, 1125
	Sensor: <input type="text"/>
	Other: 1005, 1033
Protocol	ntrip 2.0
Total received data	Time:338.85KB Day:1.90MB Month:112.89MB Total:814.45MB Details
Satellite number	39
Upload time interval	5s
Data update time	2026-05-08 14:20:27
Device connection time	2026-05-08 13:52:27
Device addition time	2026-01-28 16:55:29
Longitude and latitude	(2[redacted]6°, 1[redacted]5°) Position
Manufacturer	1
City Name	[redacted]

Figure 4-10



4.2.2 Add Project

Navigate to "Project Manage" → "Add", and fill in the project information according to your actual requirements. After successfully adding the project, go to "Structure List" → "Add Structure" and fill in the corresponding information.

Then go to "Measuring Point List" → "Add Measuring Point" and configure the settings, including monitoring type, solution type, solution engine, base station, and rover station. Finally, click "Submit".

Note: The "Solution Engine" must be selected according to the module used by the receiver.

The operation steps are shown in the figure.

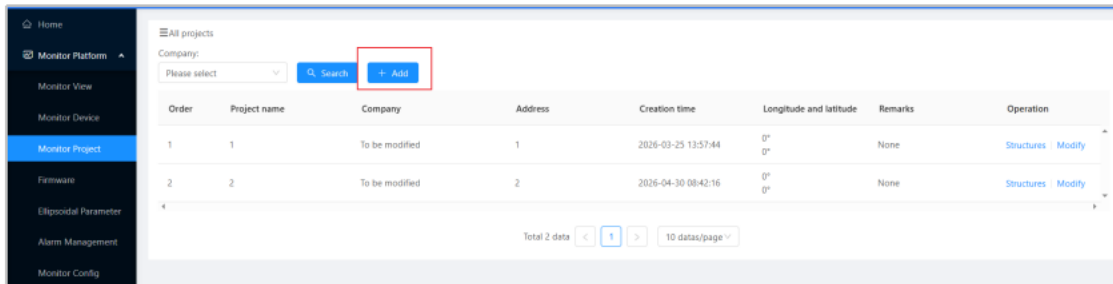


Figure 4-11

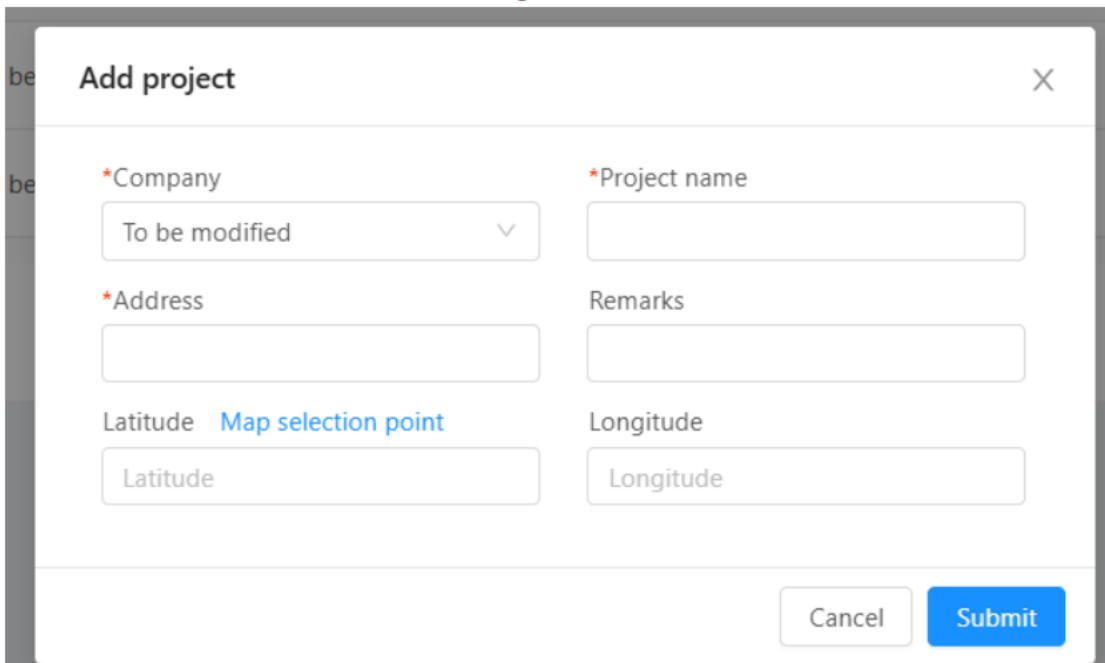


Figure 4-12



Order	Structure name	Type	Address	Creation time	Longitude and latitude	Remarks	Operate
1	1	Building	1	2026-03-25 13:58:38	0° 0°	None	Measuring points Modify

Total 1 data < 1 > 10 datas/page

Figure 4-13

Add structure

*Type: Please select (dropdown)
 *Structure name: [text input]
 *Address: [text input]
 Remarks: [text input]
 Latitude: [text input] [Map selection point](#)
 Longitude: [text input]
 [Cancel] [Submit]

Figure 4-14

Order	Name	Type	Alarm threshold	Solution type	Observation station & base station	Solution engine	Solution state	Solution time interval	Operation
<input type="checkbox"/>	1	1	Surface displacement	Close	Background solution	GM-RTCM3 License M Expired	Normal	1 Hour	Modify Threshold
<input type="checkbox"/>	2	27	Surface displacement	Close	Front-end solution	-	Normal	-	Modify Threshold
<input type="checkbox"/>	3	03	Surface displacement	Close	Background solution	GM-RTCM3 License M Expired	Normal	1 Hour	Modify Threshold

Total 3 data < 1 > 10 datas/page

Figure 4-15

Add measuring point

*Type: Please select (dropdown)
 *Name: [text input]
 *Solution type: Please select (dropdown)
 *Solution engine: Please select (dropdown)
 *Observation station: Please select (dropdown)
 *Base station: Please select (dropdown)
 *Solution time interval: Please select (dropdown)
 *Initial value filtering time: Please select (dropdown)
 *Calculate the duration of data used: Please select (dropdown)
 *Filtering algorithm: Smooth filter 4 (dropdown)
 *Resolving on the hour: Close (dropdown)
 *Coordinate transformation: None (dropdown)
 Remarks: [text input]
 [Cancel] [Submit]

Figure 4-16



4.2.3 View Data

Click "Monitor View" and select the project added in the previous section to view the collected data.

Note: Newly added projects may not display data immediately. The calculation results will appear according to the solution interval set during configuration.

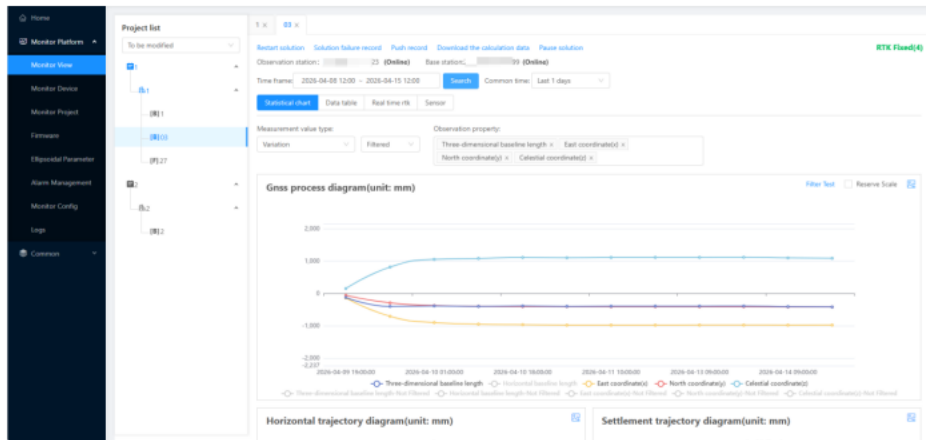


Figure 4-17

4.3 Front-end Calculation Operations

4.3.1 Upgrade Front-end Calculation Library

Navigate to "Device" → "Device Firmware" → "Upgrade Firmware" to upgrade the front-end calculation library "libfsp" version 5.1 or higher. Check the last three digits of the firmware version; if they are below 511, it is recommended to also upgrade the host firmware to the latest version on this page, as shown in the figure.

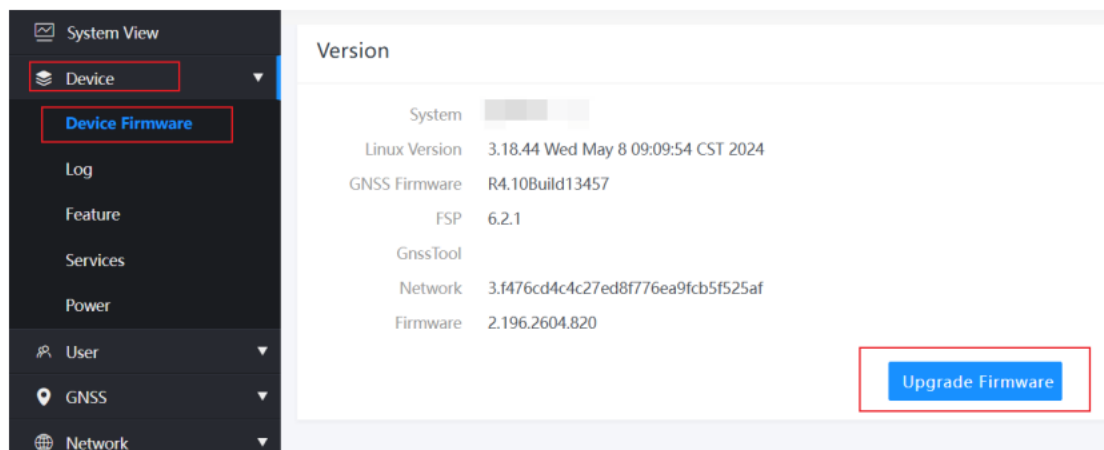


Figure 4-18



4.3.2 Activate Front-end Calculation

Navigate to "GNSS Config" → "Front-end Solution" and click "Activate".

After activation, a success message will appear. Click "OK", and the option to set Front-end calculation parameters will be displayed, indicating that the Front-end calculation has been successfully activated.

4.3.3 Base Station Host Operation

Navigate to "Data Port" → "Ntrip Server", enable "CH01" (you can configure CH01-CH05 to send data to different servers simultaneously), fill in the following parameters, and click "Apply" to send differential data to the differential forwarding server:

- Version: "Ntrip/2.0" or "Ntrip/1.0"
- Host: Enter the differential forwarding server address according to the user's actual setup
- Port: Enter the port number of the differential server as required
- Mount Point: Default is the receiver serial number
- Username: Typically not empty; if a specific user account exists, enter it (here "user")
- Password: Typically not empty; if a specific password is set, enter it (here "pwd")
- Data: Select the type of transmitted data, here choose differential positioning data
- Heartbeat Timeout: Used to detect network availability of the host; generally set to "Disable"

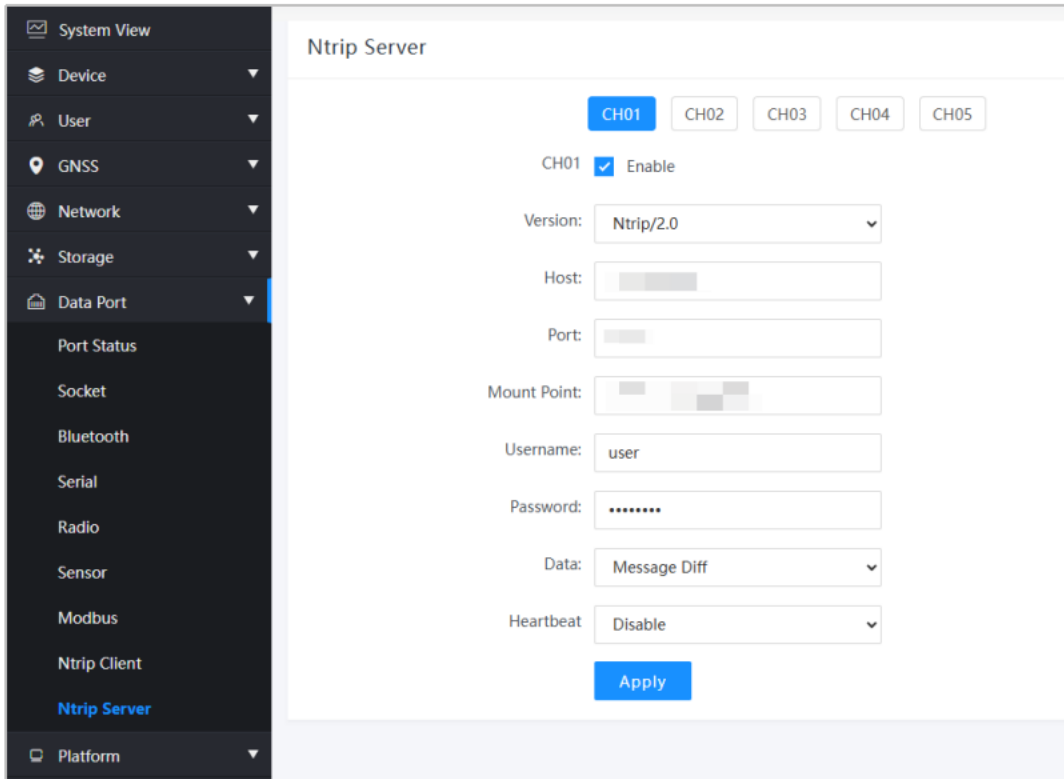


Figure 4-19

After configuration, check "Data Port" → "Port Status" → "Ntrip Server" to verify if it shows "Running" correctly.

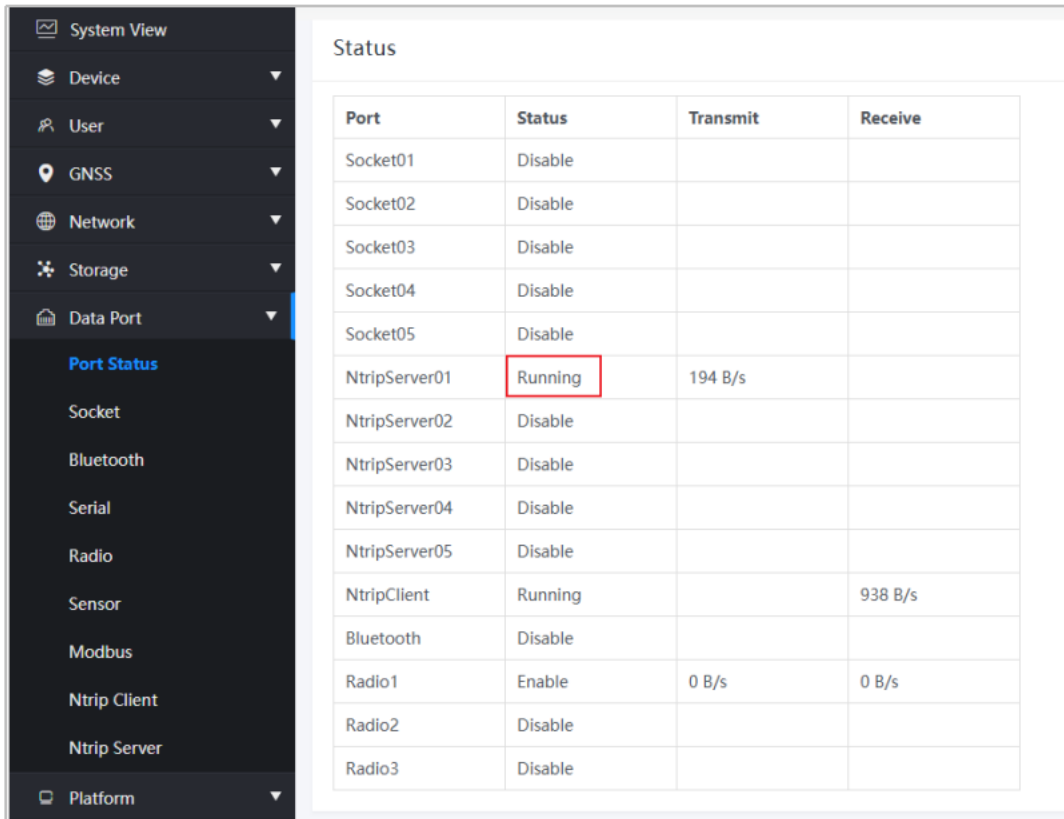


Figure 4-20



4.3.4 Rover Host Operation

Navigate to "Data Port" → "Ntrip Client" to configure the rover to receive differential data from the base station. Fill in the following parameters:

- Host: Enter the differential forwarding server address, which must match the server connected to the base station (i.e., the same as configured in the previous section)
- Port: Enter the differential server port, which must match the base station server
- Username: Typically not empty; if a specific account is set, enter it (here "user")
- Password: Typically not empty; if a specific password is set, enter it (here "pwd")

Click "List" and select the base station serial number in the "Mount Point" field. Finally, click "Apply" to complete the configuration.

The screenshot displays the XFIX configuration interface. On the left is a dark sidebar menu with the following items: System View, Device, User, GNSS, Network, Storage, Data Port (highlighted), Port Status, Socket, Bluetooth, Serial, Radio, Sensor, Modbus, Ntrip Client (highlighted in blue), Ntrip Server, and Platform. The main content area is titled "Ntrip Client" and contains the following configuration options:

- Ntrip Client Enable
- Host:
- Port:
- Username:
- Password:
- Mount Point:
- List
- Apply

Figure 4-21



After configuration, check "Data Port" → "Port Status" → "Ntrip client" to verify if it shows "Running" correctly.

Status			
Port	Status	Transmit	Receive
Socket01	Disable		
Socket02	Disable		
Socket03	Disable		
Socket04	Disable		
Socket05	Disable		
NtripServer01	Running	194 B/s	
NtripServer02	Disable		
NtripServer03	Disable		
NtripServer04	Disable		
NtripServer05	Disable		
NtripClient	Running		1022 B/s
Bluetooth	Disable		
Radio1	Enable	0 B/s	0 B/s
Radio2	Disable		
Radio3	Disable		

Figure 4-22

Navigate to "GNSS" → "Front-end Solution" and enable the frontend calculation. Configure the following parameters:

- Base Source: Select the source of the frontend calculation data; here, choose "Ntrip Client"
- Period: The interval at which each solution result is calculated
- Interval Min: The time interval of the rover differential data
- Keep RINEX files: Store the data as RINEX files on the host
- Strict: Whether to filter out results with low accuracy
- Filter Type: The smoothing algorithm applied to past solution results (e.g., averaging)
- Filter Size: The number of past solution results used for smoothing
- Base: If non-zero, this value is subtracted from each solution before display
- Auto Base: When enabled, after the number of results equals the "Filter Size", a baseline value is generated and applied to the "Base" field



Note: Since the "Period" is set to 1 hour, you need to wait at least 1 hour. Then navigate to "GNSS" → "Front-end Solution" → "Solution Result" to view the calculated results, as shown in the figure.

FSP

mode:

Base Source:

Period:

Overlap:

Interval Min: ms

Keep RINEX files:

Strict:

Filter Type:

Filter Size:

Base: ENU

Auto base:

Rotation: Calculate

Figure 4-23

Result

Date: GPS Time

Serial	Time start	Time end	State	SatNum	RMS	ENU		
1	2026-04-24 23:00:00	2026-04-25 01:00:00	1-0	27	0.0168	-0.2422	-0.0600	-0.0608
2	2026-04-25 00:00:00	2026-04-25 02:00:00	1-0	27	0.0247	-0.1814	-0.0545	-0.0791
3	2026-04-25 01:00:00	2026-04-25 03:00:00	1-0	28	0.0102	-0.1357	-0.0900	-0.1050
4	2026-04-25 02:00:00	2026-04-25 04:00:00	1-0	28	0.0166	-0.0711	-0.0801	-0.1364
5	2026-04-25 03:00:00	2026-04-25 05:00:00	1-0	29	0.0394	-0.2075	-0.0978	-0.1158
6	2026-04-25 04:00:00	2026-04-25 06:00:00	1-0	30	0.0298	-0.1760	-0.1158	-0.0981
7	2026-04-25 05:00:00	2026-04-25 07:00:00	1-0	30	0.0244	-0.1526	-0.0680	-0.1349
8	2026-04-25 06:00:00	2026-04-25 08:00:00	1-0	28	0.0679	-0.1099	-0.0326	-0.1191
9	2026-04-25 07:00:00	2026-04-25 09:00:00	1-0	26	0.0632	-0.0814	-0.0374	-0.1073
10	2026-04-25 08:00:00	2026-04-25 10:00:00	1-0	26	0.0187	-0.1765	-0.0619	-0.0950
11	2026-04-25 09:00:00	2026-04-25 11:00:00	1-0	26	0.0279	-0.2041	-0.0491	-0.1669
12	2026-04-25 10:00:00	2026-04-25 12:00:00	1-0	27	0.0305	-0.2428	-0.0543	-0.1509
13	2026-04-25 11:00:00	2026-04-25 13:00:00	1-0	28	0.0407	-0.2169	-0.0750	-0.1728

Figure 4-24



Navigate to "Platform" → "Front-end Solution Upload" → "XYZ" and enter the URL:

https://<Server_IP>:60443/api/request

This uploads the front-end calculation results to the "Monitoring Cloud Platform".

Note: Replace <Server_IP> with the IP address of your company 's Monitoring Cloud server. Each user may have a different server address.

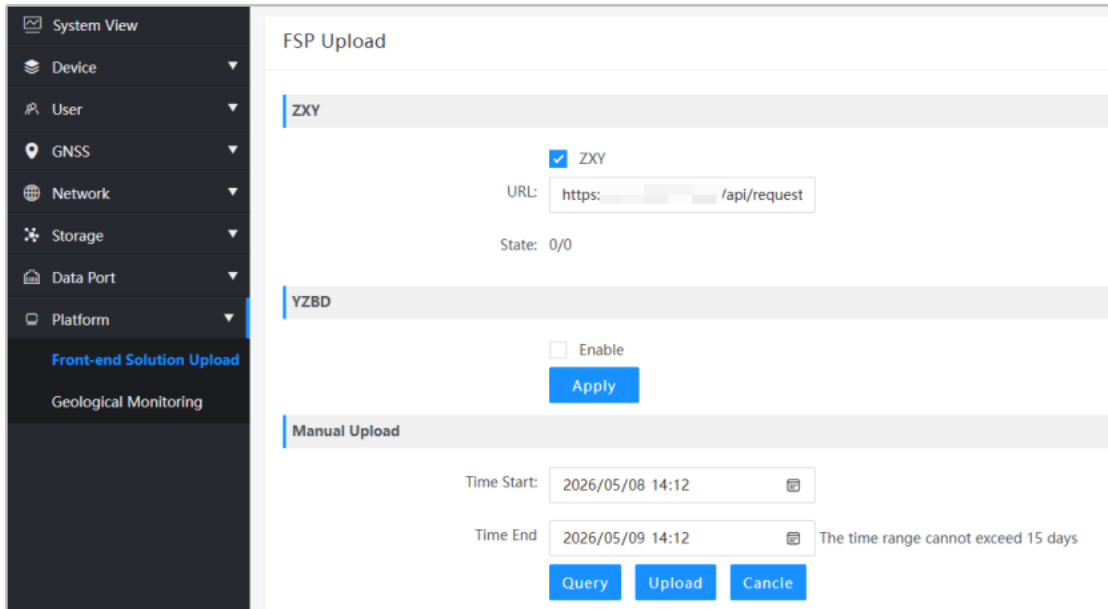


Figure 4-25

4.3.5 Monitoring Cloud Platform Operation

Log in to the "Monitoring Cloud Platform", navigate to "Monitor Platform" → "Device Manage", and click "Add" to add a new rover serial number.

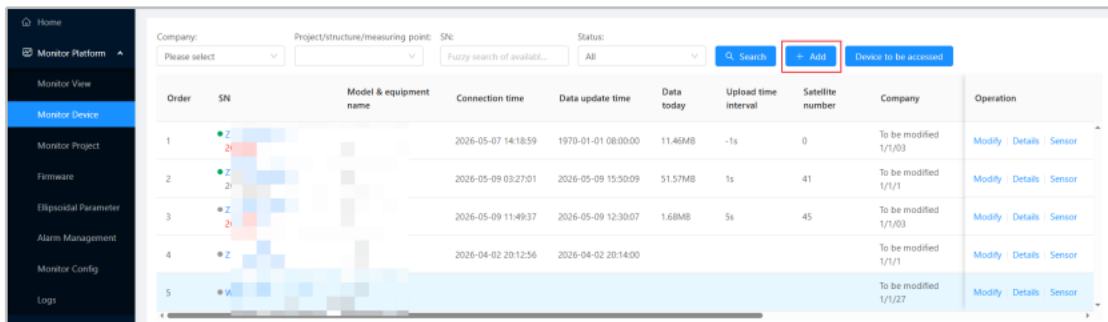


Figure 4-26



The "SN" must match the rover serial number; other fields can be filled in according to your preferences.

Figure 4-27

Click "Monitor Platform" → "Project Manage", then click "Add" and fill in the project information.

Order	Project name	Company	Address	Creation time	Longitude and latitude	Remarks	Operation
1	1	To be modified	1	2026-03-25 13:57:44	0° 0°	None	Structures Modify
2	2	To be modified	2	2026-04-30 08:42:16	0° 0°	None	Structures Modify

Figure 4-28

Figure 4-29



After adding the project, navigate to "Monitor Platform" → "Project Manage" → "Structures".

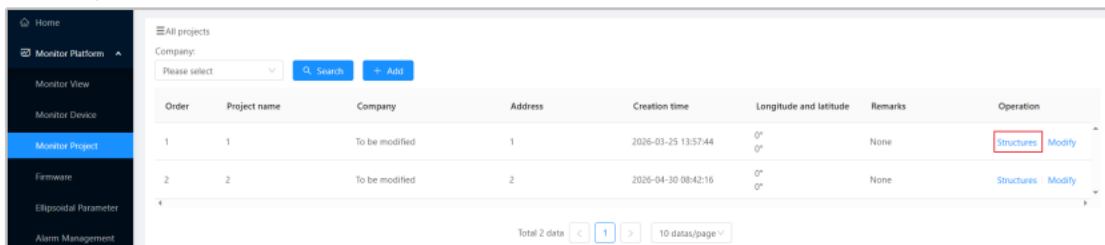


Figure 4-30

Click "Structures" → "Add" to add a structure, and fill in the information according to your actual requirements.

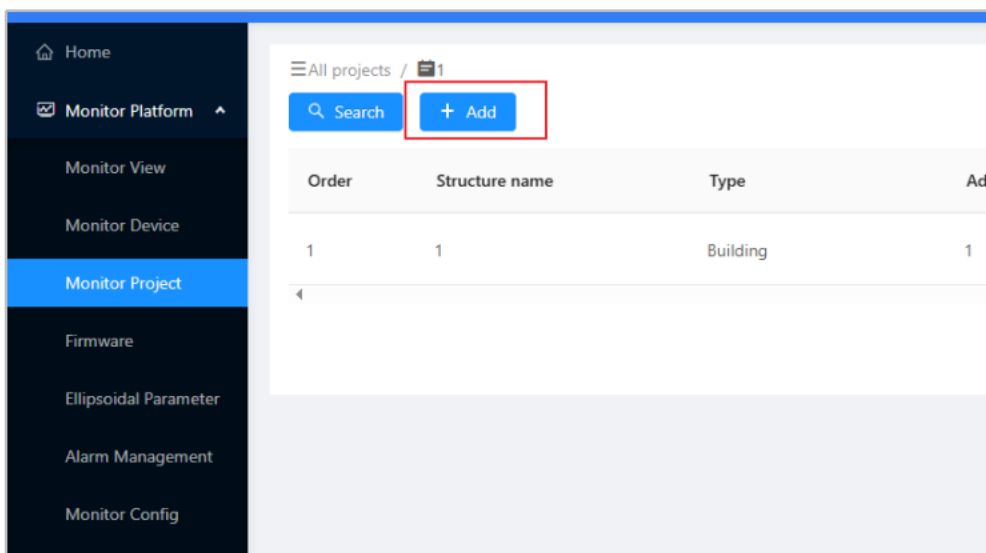


Figure 4-31

Add structure X

***Type**
Please select v

***Structure name**

***Address**

Remarks

Latitude Map selection point

Longitude

Figure 4-32



Navigate to "Monitor Platform" → "Project Manage" → "Structures" → "Measuring Points".

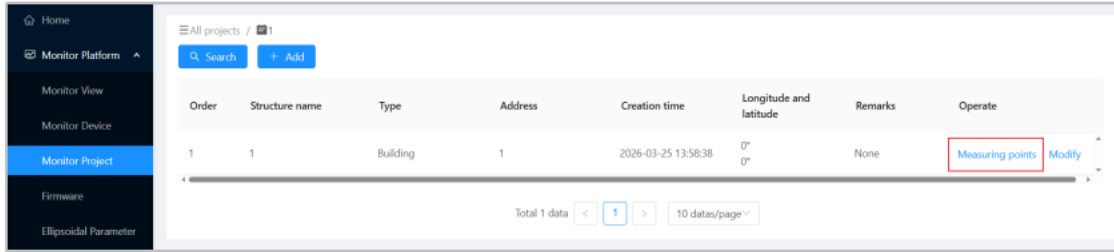


Figure 4-33

Click "Add".

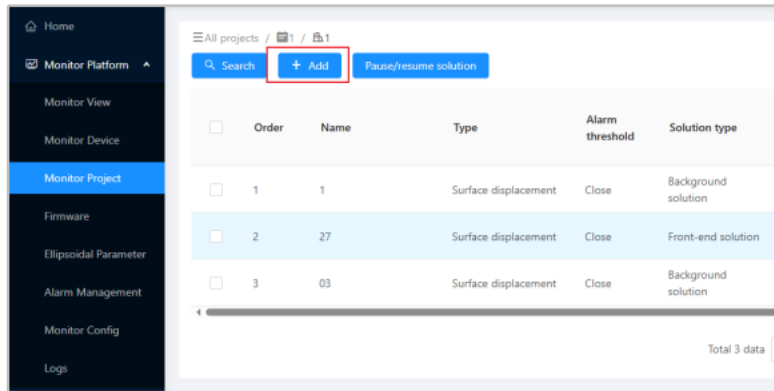


Figure 4-34

Add the frontend calculation project with the following configuration:

- Type: Surface Displacement
- Measuring Point Name: Custom
- Solution Type: Front-end Calculation
- Rover Station: Enter the rover SN

Add device ✕

*Company <input type="text" value="To be modified"/>	*SN: 0 Add multiple orders <input type="text"/>
*Device name <input type="text"/>	*Model U6 M66 M68 <input type="text"/>
*Manufacturer <input type="text"/>	*Address <input type="text"/>
Username ? <input type="text" value="Can be empty"/>	Password <input type="text" value="Can be empty"/>
Remarks <input type="text"/>	

Figure 4-35



After the U6 completes the frontend calculation, navigate to "Monitor Platform" → "Monitor View" and view the solution results for the corresponding monitoring project.

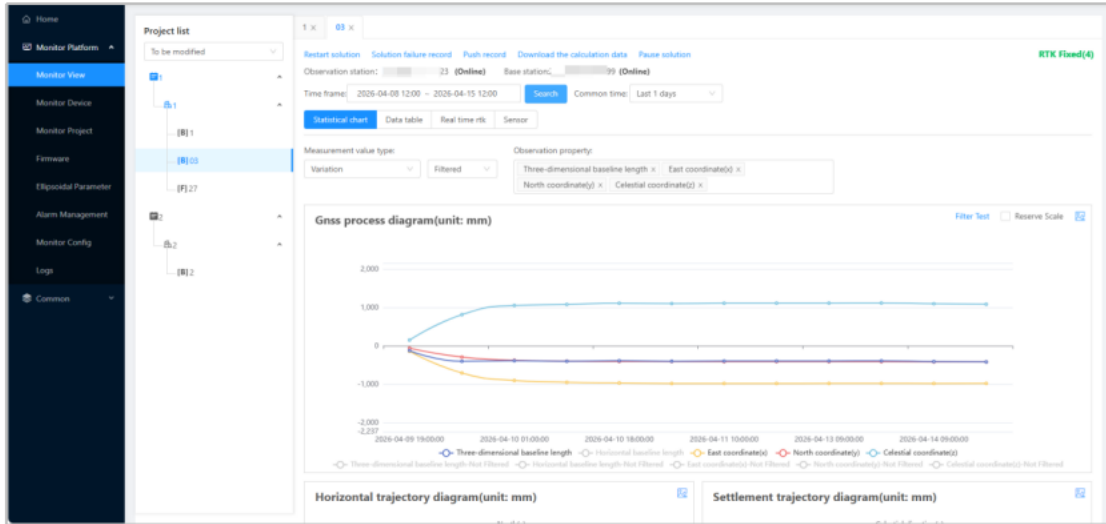


Figure 4-36

On this page, you can query data for a specific time period using the "Time Frame" filter, as shown in Figure 4-37.

The "Statistics Charts" section includes:

- Measurement Types: "Change Amount", "Observed Value"
- Observation Attributes: "3D Baseline Length", "Horizontal Baseline Length", "East Coordinate", "North Coordinate", "Up Coordinate"

You can also switch to "Data Table" to view the collected data at each time point, and set the initial values based on the actual observations.

Note: If the receiver has been moved, to ensure smooth curve display with minimal fluctuations, it is recommended to reset the initial values or recalculate the results.

Based on the queried data, detailed "Horizontal Trajectory" and "Settlement Trajectory" diagrams are also displayed. In the charts, the red marker indicates the current point, and the green marker indicates the starting point.

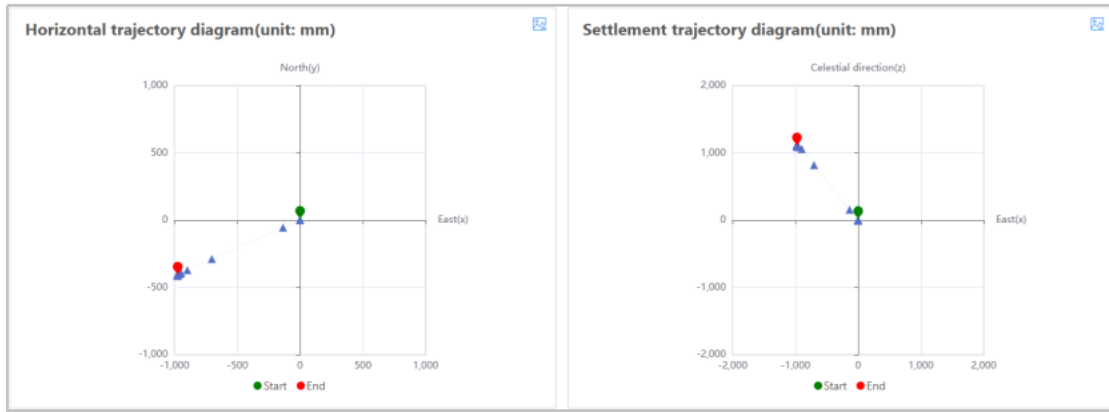


Figure 4-37