iMaster NCE-CampusInsight DataSheet

Huawei campus network analyzer — iMaster NCE-CampusInsight — dynamically obtains network data in seconds and proactively identifies common network issues, achieving user experience awareness throughout the journey. It implements E2E visualization of audio and video experience, helping administrators ensure ultimate network experience.

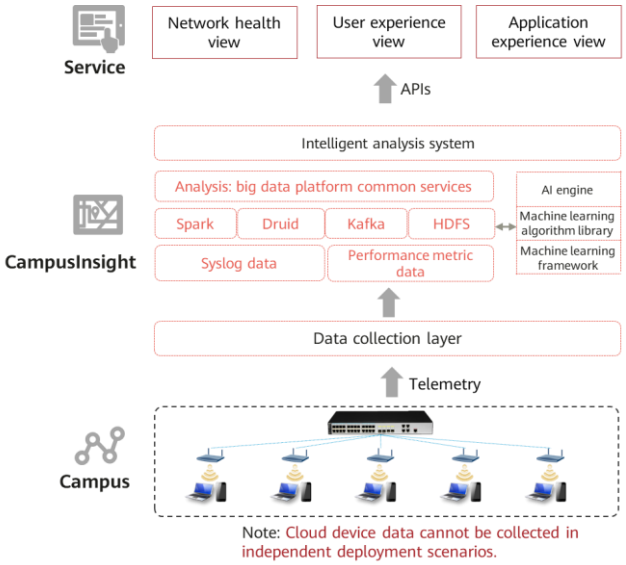
Product Overview

Currently, high-quality network services have become an indispensable part of enterprise operations. From mobile office and HD video conference to guest reception, network experience is closely related to employee efficiency and customer satisfaction. However, as the enterprise scale expands, application scenarios are becoming more complex, which makes the network environment that is difficult to measure become more complex than ever. Traditional O&M methods cannot proactively detect problems, resulting in low troubleshooting efficiency and bringing heavy burden to IT personnel.

Huawei iMaster NCE-CampusInsight (CampusInsight for short), a Huawei campus network analyzer, changes the traditional monitoring mode that focuses on resource status. It collects network data in real time through Telemetry, identifies network behaviors and fault patterns based on big data analytics and intelligent algorithms. This helps O&M personnel proactively detect 85% of potential network issues and build E2E high-quality Wi-Fi-LAN-WAN network experience.

Architecture and Key Components

CampusInsight is built based on Huawei big data platform. It uses the Streaming Telemetry technology to collect device data in quasi-real time, and performs feature analysis and baseline calculation using intelligent algorithms. It can automatically identify and demarcate network faults, optimize networks, and display analysis results on various GUIs.



Product Highlights

Network health view, improving network performance by 58%

- **Multi-dimensional network health evaluation:** Periodically push reports for LAN-WAN network health analysis.
- **Minute-level fault demarcation and locating:** Proactively identify 200+ issues of eight types and predict potential risks in advance.
- **Automatic and intelligent calibration:** Perform predictive calibration for four common Wi-Fi network challenges, without manual intervention.
- **Energy saving:** Display energy consumption information in multiple dimensions and intelligently recommend energy-saving policies, reducing the energy consumption by 30%.

User experience view, reducing user complaints by 90%

- **VIP user experience assurance:** Intuitively display VIP user experience scores and proactively report alarms for VIP exceptions.
- **Full-journey user experience visualization:** Visualize user experience at each moment, enabling fault backtracking.
- **Protocol-level trace of access issues**: Provide protocol-level trace of user access issues, root cause analysis, and rectification suggestions.

Application experience view, shortening fault locating time by 95%

- **Intelligent identification and awareness of applications:** Intelligently identify 6,000+ mainstream applications and proactively detect the application quality.
- **Minutes-level application fault locating**: Use the exclusive IFIT technology to demarcate and locate faults from Wi-Fi, LAN, to WAN in an E2E manner in minutes.

NetMaster, 80% of typical wireless network faults are automatically resolved

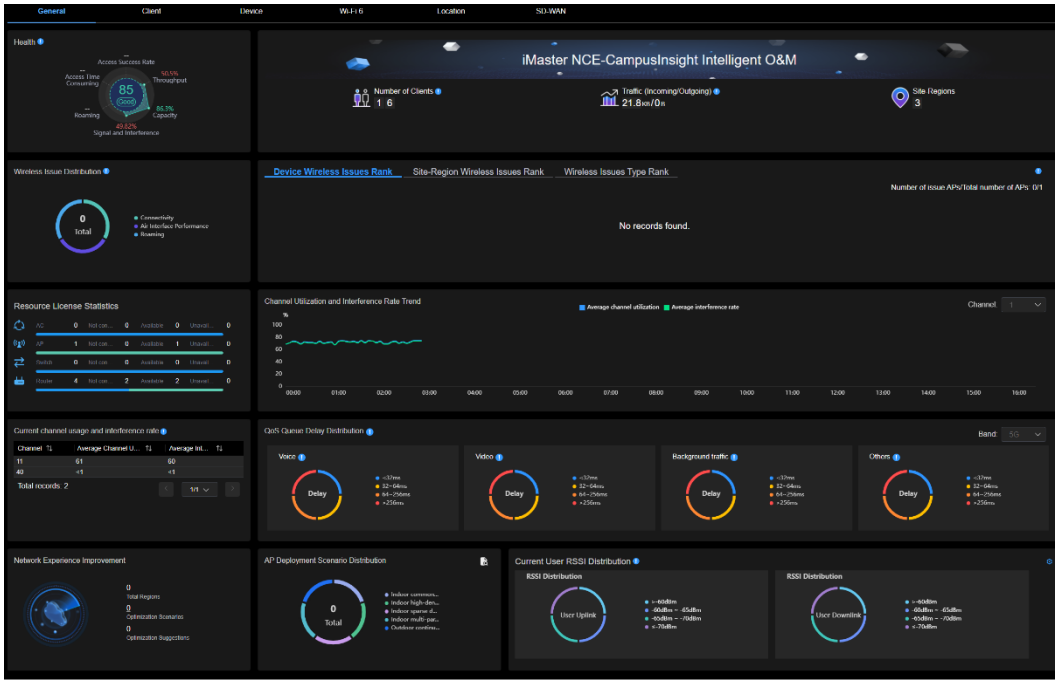
- **Network O&M Copilot:** Interoperate with communication professional model and implement interactive O&M in natural languages.
- **Wi-Fi Optimization Agent**: Auto-sensing, auto-analysis, automated decision-making, and auto-execution 7 categories and 30 sub-categories of wireless faults are automatically closed..

Key Features

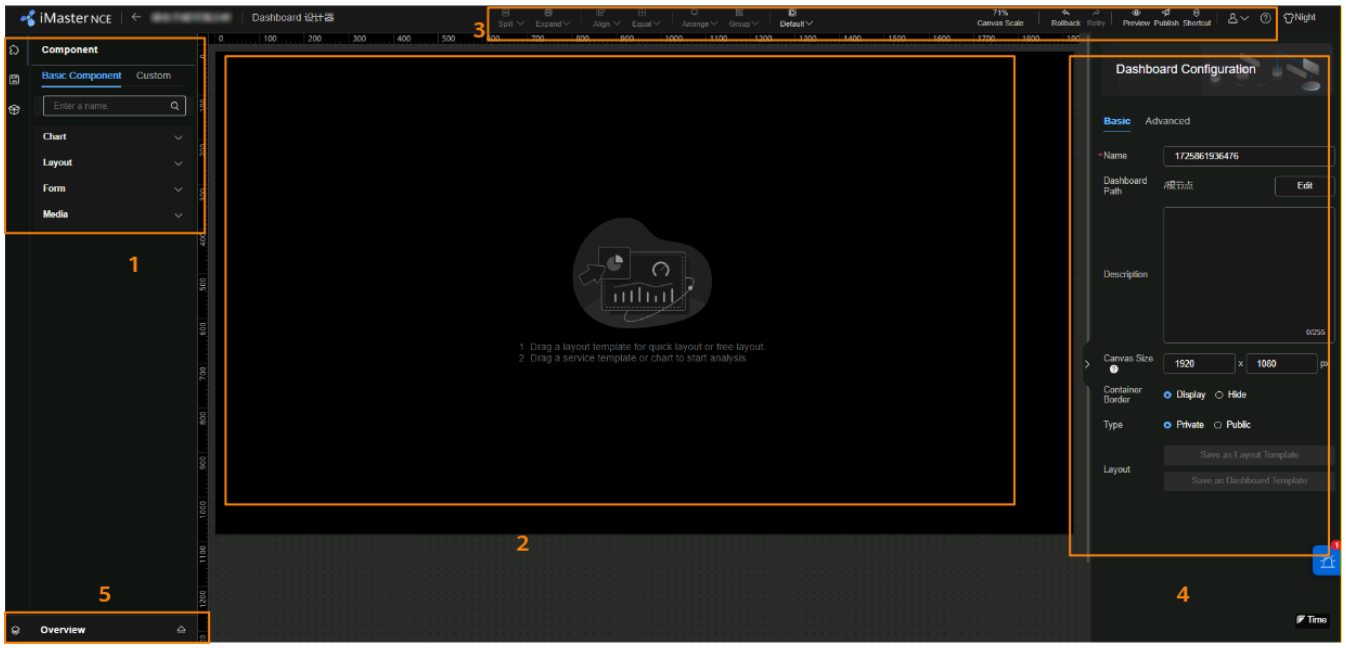
Network Health View

Multi-dimensional Data Analysis on Dashboard, Easily Understanding Network Status

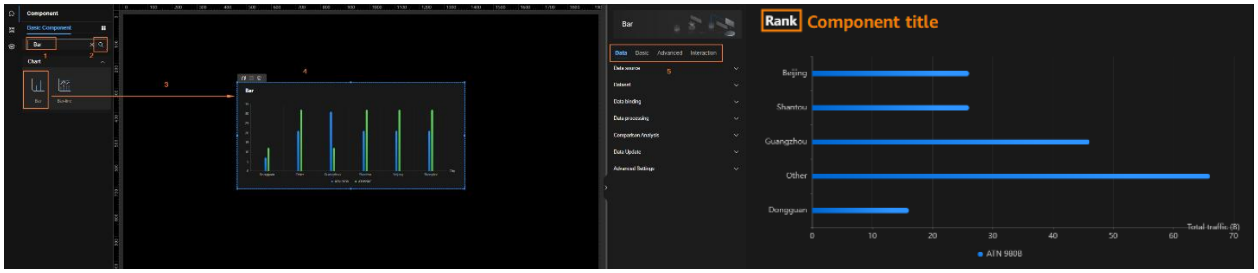
Dashboard provides various portlets in terms of clients and devices. The administrator can customize the portlets to be displayed on the GUI based on the network maintenance focuses, achieving the best status monitoring display effect.

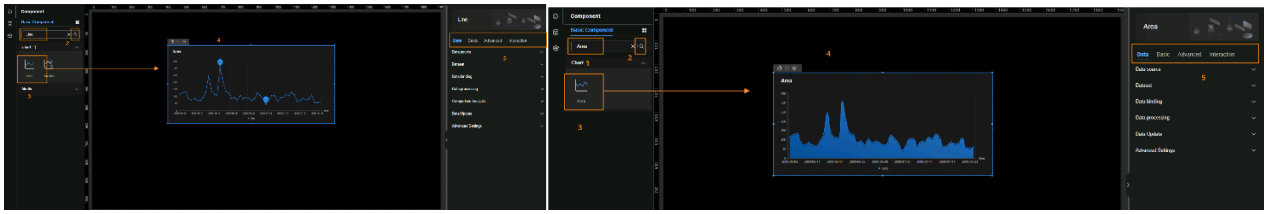


Reports are visualized page creation services provide abundant visualization components, flexible data access, and multiple page creation modes, helping you quickly create and publish professional and real-time visualization applications. You can create large-screen service pages in minutes through one-stop visualized data development on Reports. On the visualized Report development page, you can drag components, set the page layout, and interconnect with service data to build a Report page.



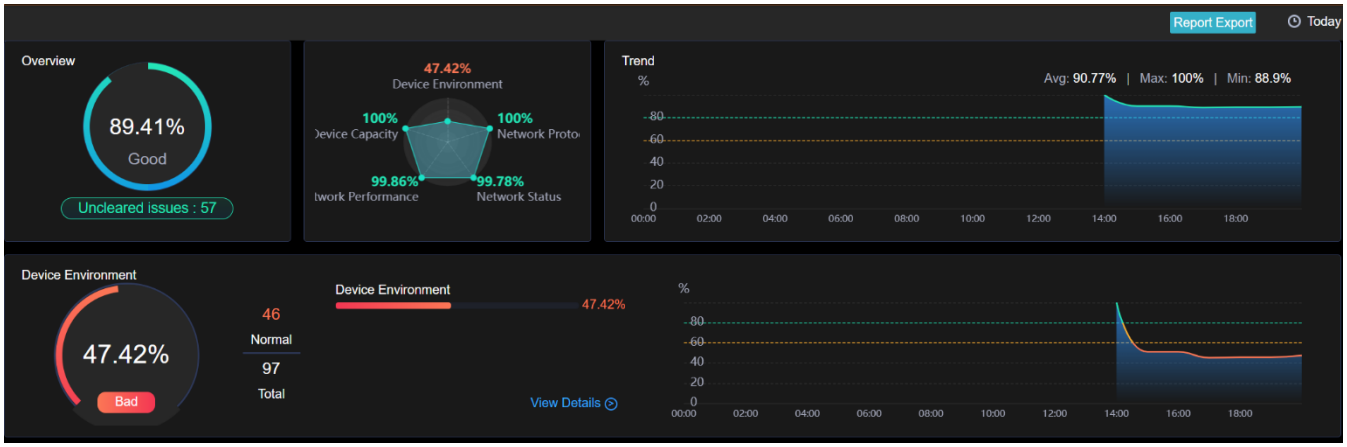
General chart components process data in a visualized manner, helping you quickly filter desired information and make decisions based on the data. Various chart types are provided, including: bar chart, rank chart, line chart, area chart, pie chart, ring chart, bar-line chart, table.



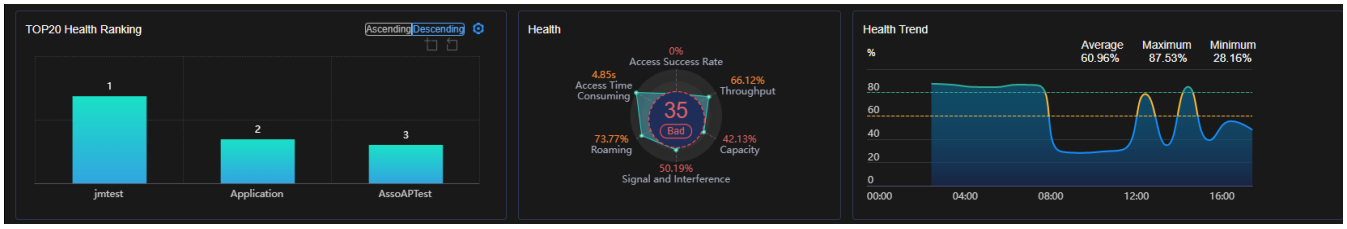


Multi-dimensional Network Health, Driving Proactive Network Optimization

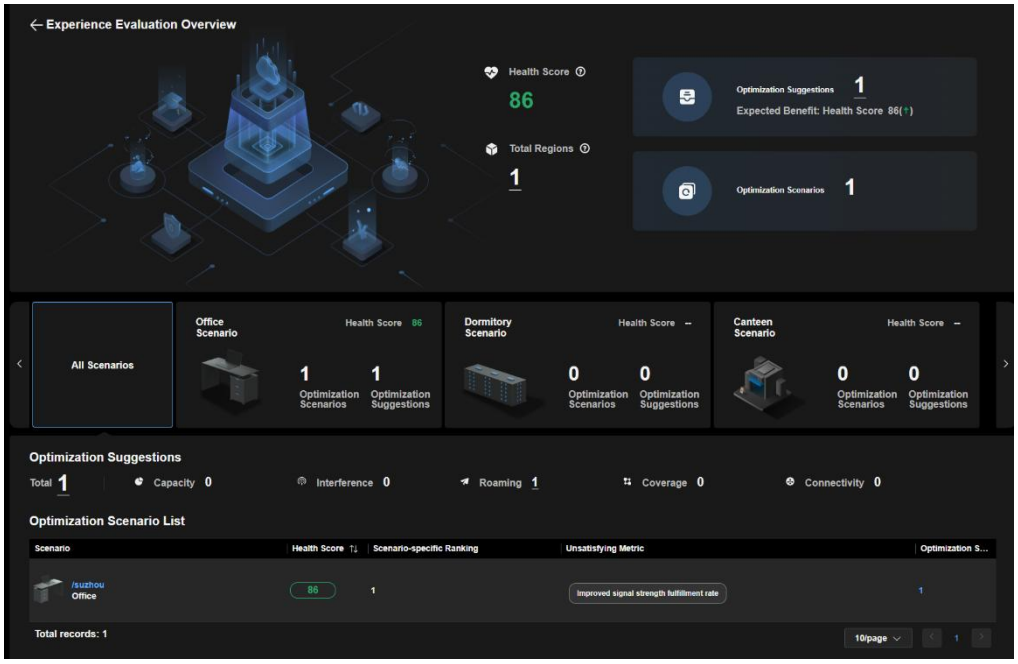
Wired network health is evaluated from five dimensions of a campus network, helping O&M personnel gain insights into the network and view the overall experience quality of the entire network.



Wireless network health displays the overall evaluation results of wireless user experience quality in a campus. A wireless metric monitoring system is established based on the access success rate, time required for access, signal and interference, roaming fulfillment rate, capacity health, and throughput fulfillment rate. CampusInsight can analyze the distribution of metrics and objects in depth to clearly determine the network quality. It also provides comparison and analysis of different time and regions and sends quality evaluation reports in real time or periodically through emails, helping administrators proactively optimize networks and driving continuous improvement from poor experience to good experience.

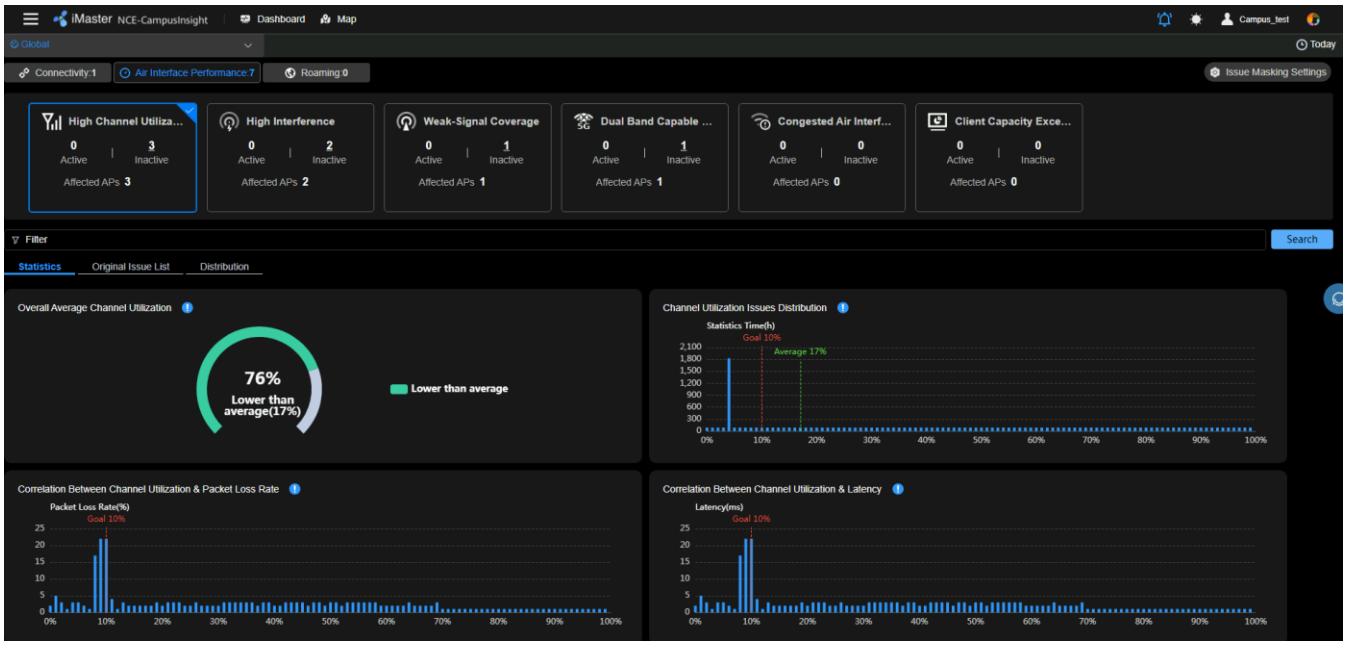


The experience evaluation overview area displays the health score, total number of scenarios, network optimization scenarios, network optimization suggestions, and list of network optimization scenarios.



Issue Statistics Overview, Quickly Evaluating Issue Impacts

Overall issue trend and dimension-based issue distribution can be displayed, and administrators can view the issue status attribute (active/inactive) and number of affected clients, helping the administrators evaluate the issue timeliness and impact scope.

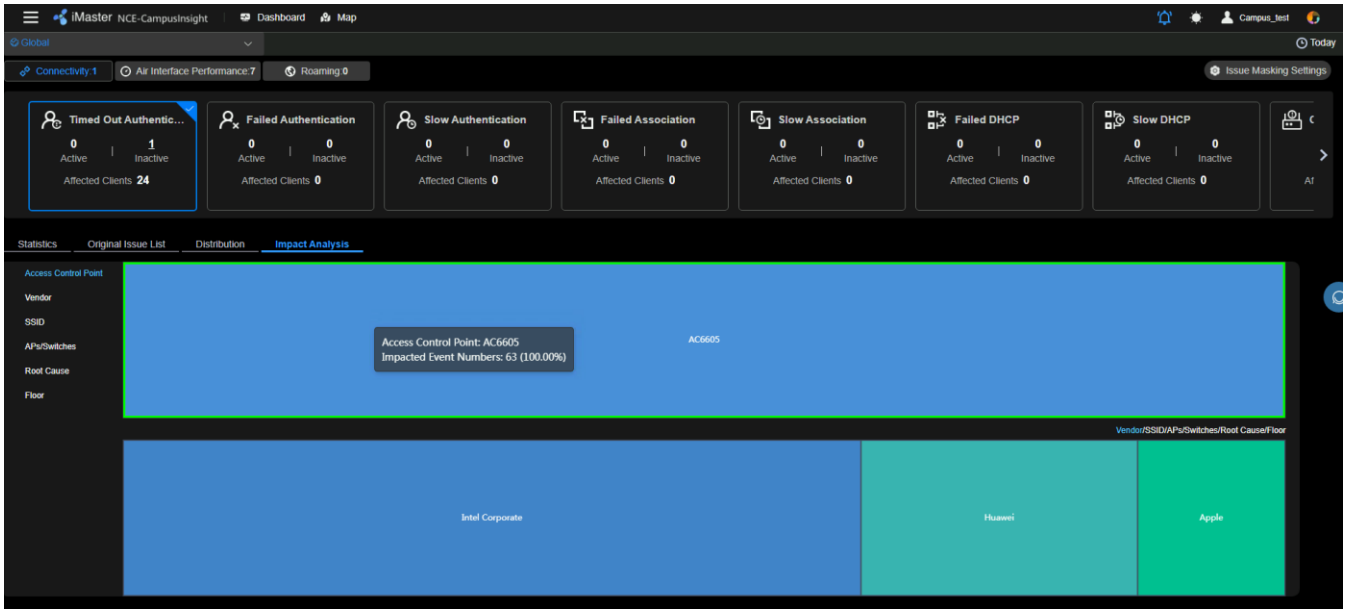


Multi-dimensional Issue Distribution, Quickly Focusing on Devices Where Issues Frequently Occur

The number of issue occurrences, number of affected users, and issue change trend of different devices are displayed based on the heatmap. Administrators can perform comparison and analysis from time and space dimensions to view the devices and time segments with frequent issues, quickly focus on failure points, and perform proactive O&M.

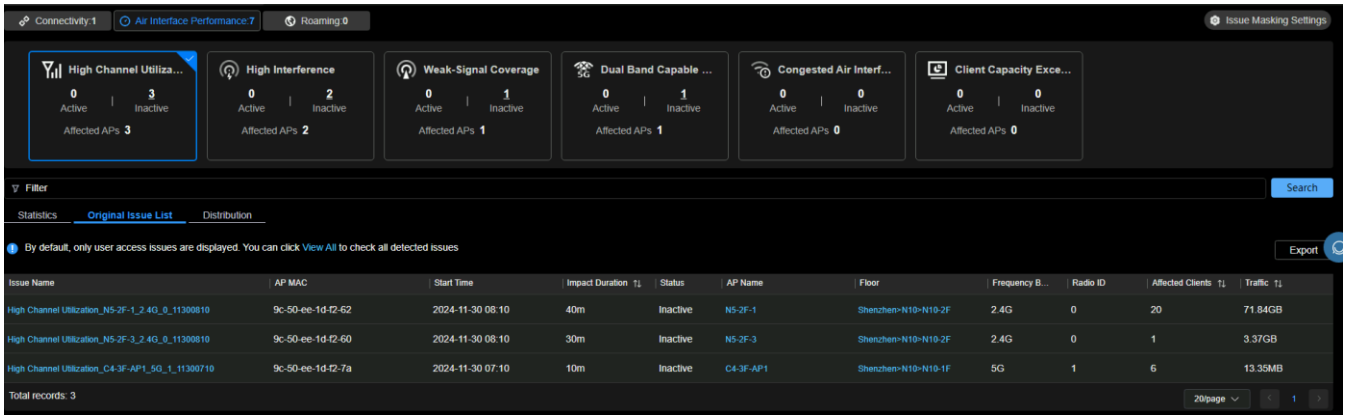
Impact Correlation Analysis, Quickly Analyzing and Demarcating Issues

Issue impact is displayed from multiple dimensions, such as the AC, vendor, SSID, AP, user, and root cause. The area chart displays the impact degree of an object. A larger area indicates a higher impact degree. By comparing the area distribution, administrators can determine whether the issue is a group issue or an individual issue. Multi-condition correlation analysis is supported and root causes can be quickly located through layer-by-layer drilling.



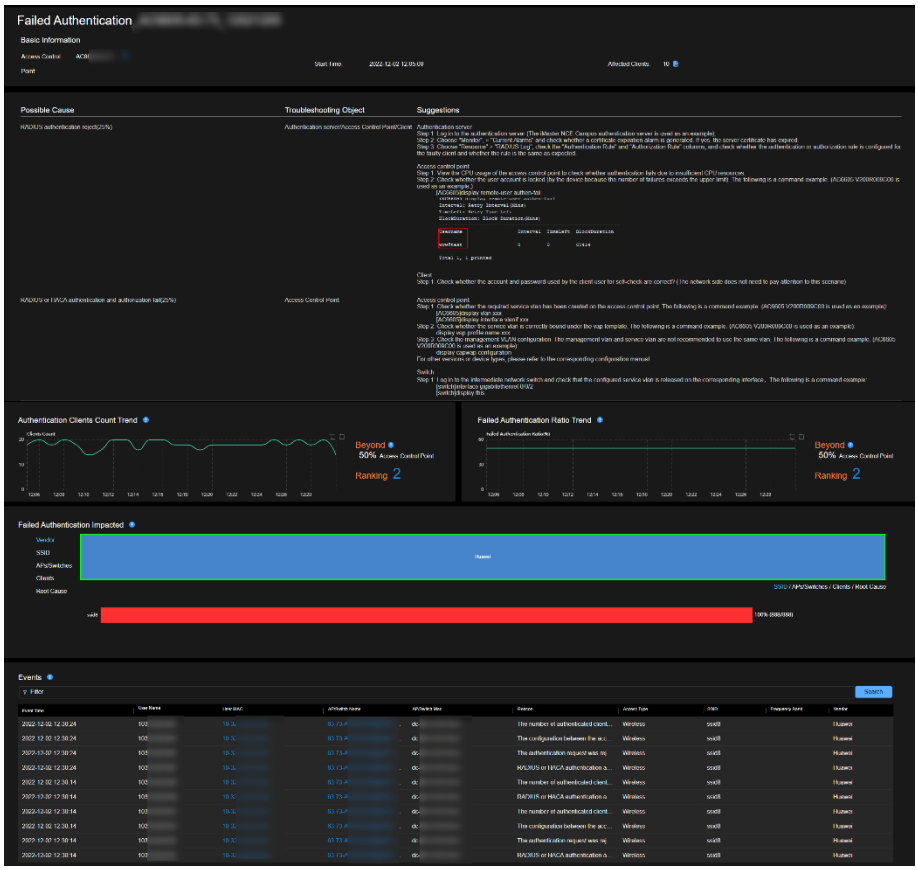
Historical Network Behavior Playback, Quickly Tracing Issues

The aggregated issue information list can be viewed, helping administrators play back historical network behavior. The aggregated issue information includes the associated device, duration, number of affected clients, and number of occurrences of each issue.



Root Cause Analysis and Rectification Suggestions, Assisting Issue Closure

Administrators can view details about an issue, including the duration, activeness, distribution trend, and impact scope. The system can match fault scenarios based on the fault knowledge base, automatically identify root causes, and provide rectification suggestions, helping administrators to troubleshooting and rectifying the issue. In addition, the system can compare the faulty devices with other devices to quickly identify high-risk objects, providing a basis for proactive optimization.



Exception Detection Based on a Dynamic Baseline, Proactively Identifying Connectivity Issues

O&M personnel can view the overall issue distribution during user login and review the overall network access quality. Connectivity issues can be identified in three phases: association, authentication, and DHCP. This

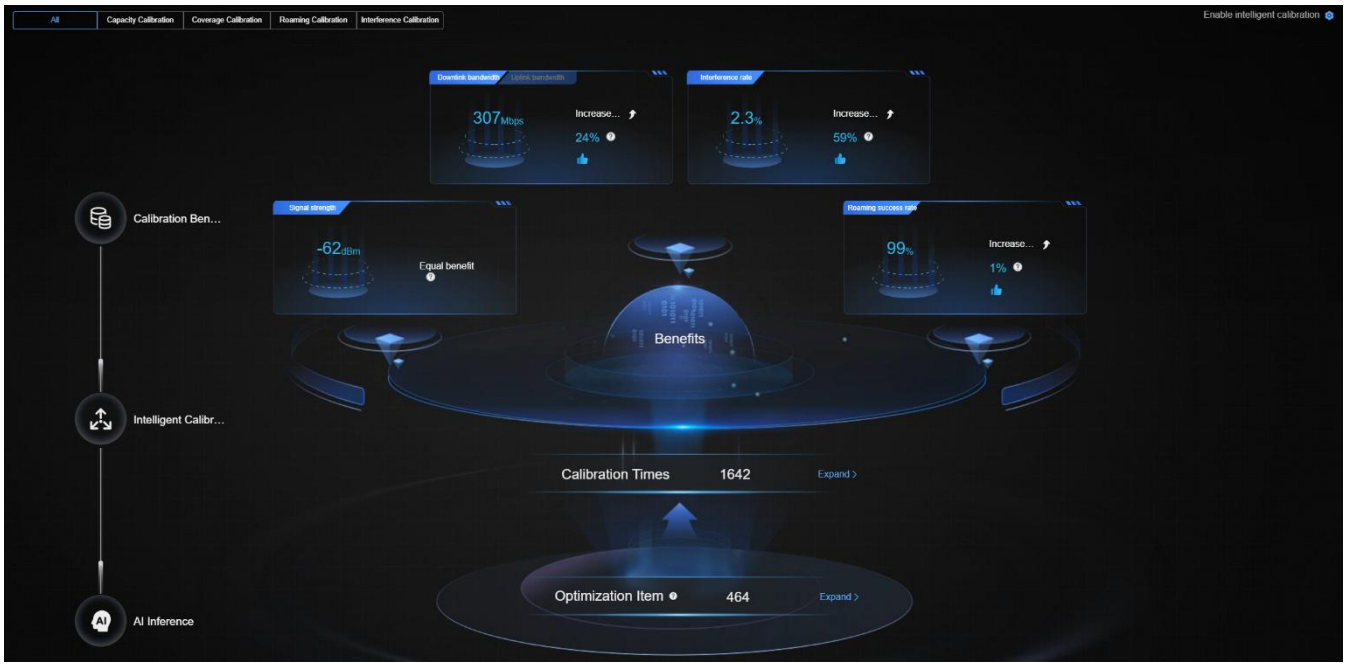
helps administrators locate faults. Distribution of affected APs and affected clients can be displayed in area charts, helping administrators quickly determine the impact scope and affected objects and take specific measures.

In addition, CampusInsight uses intelligent algorithms to learn massive network data, draws baselines, and dynamically adjusts the baselines based on network behavior characteristics. By comparing the actual network data with the dynamic baselines, administrators can identify exceptions before network quality deteriorates.

Intelligent Radio Calibration, Improving Network-wide Performance by 50%+

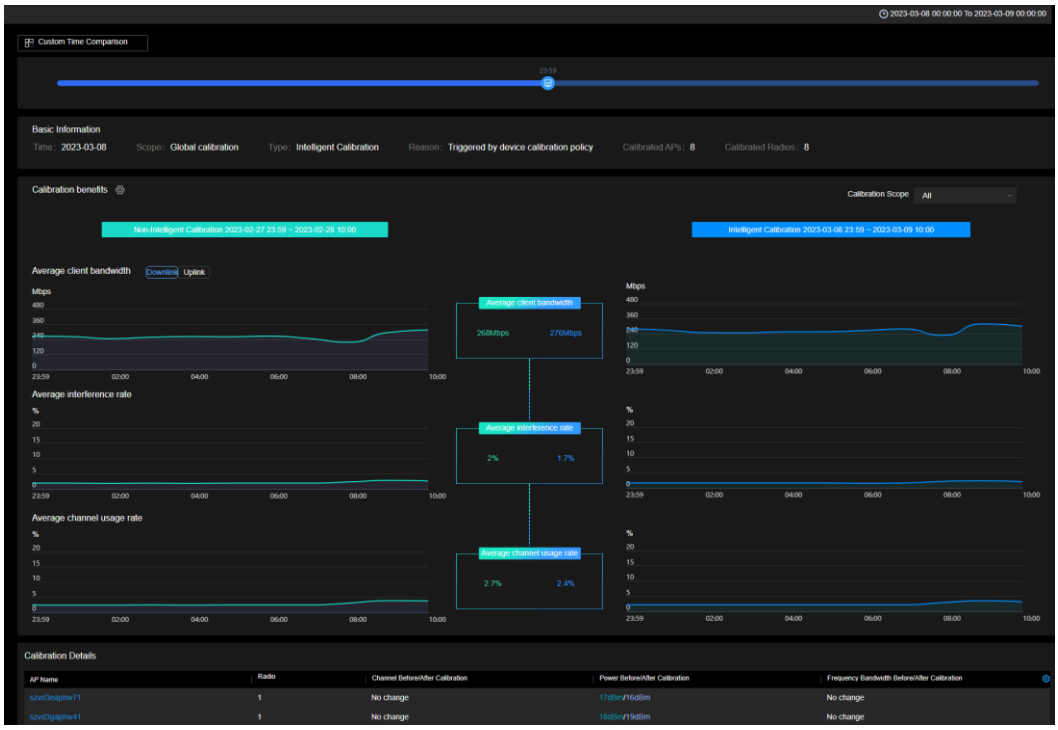
Automatic calibration, Intelligent predictive calibration

After intelligent radio calibration is enabled for the first time, historical big data is analyzed using the AI algorithm. Network devices periodically request big data and the analytics results based on the calibration policy to implement calibration. CampusInsight displays calibration benefits, intelligent calibration statistics, and optimization items. You can expand or collapse Calibration Times and optimization items as required.



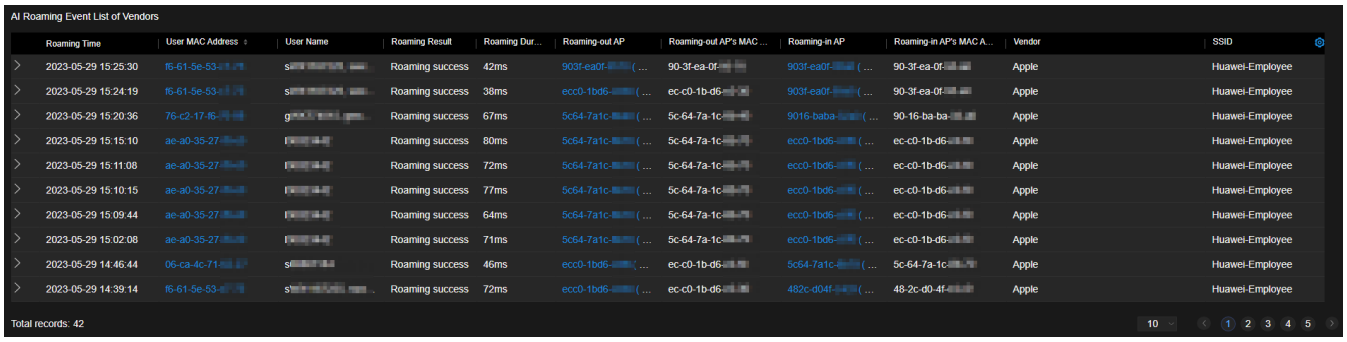
CampusInsight will compare key network metrics before and after the calibration each time intelligent radio calibration is performed. The key metrics include the average physical-layer bandwidth of terminals, average interference rate, and average channel utilization. In addition, CampusInsight displays the APs involved in

each calibration as well as the differences in channel, power, and frequency bandwidth for each AP before and after the calibration.



AI Roaming

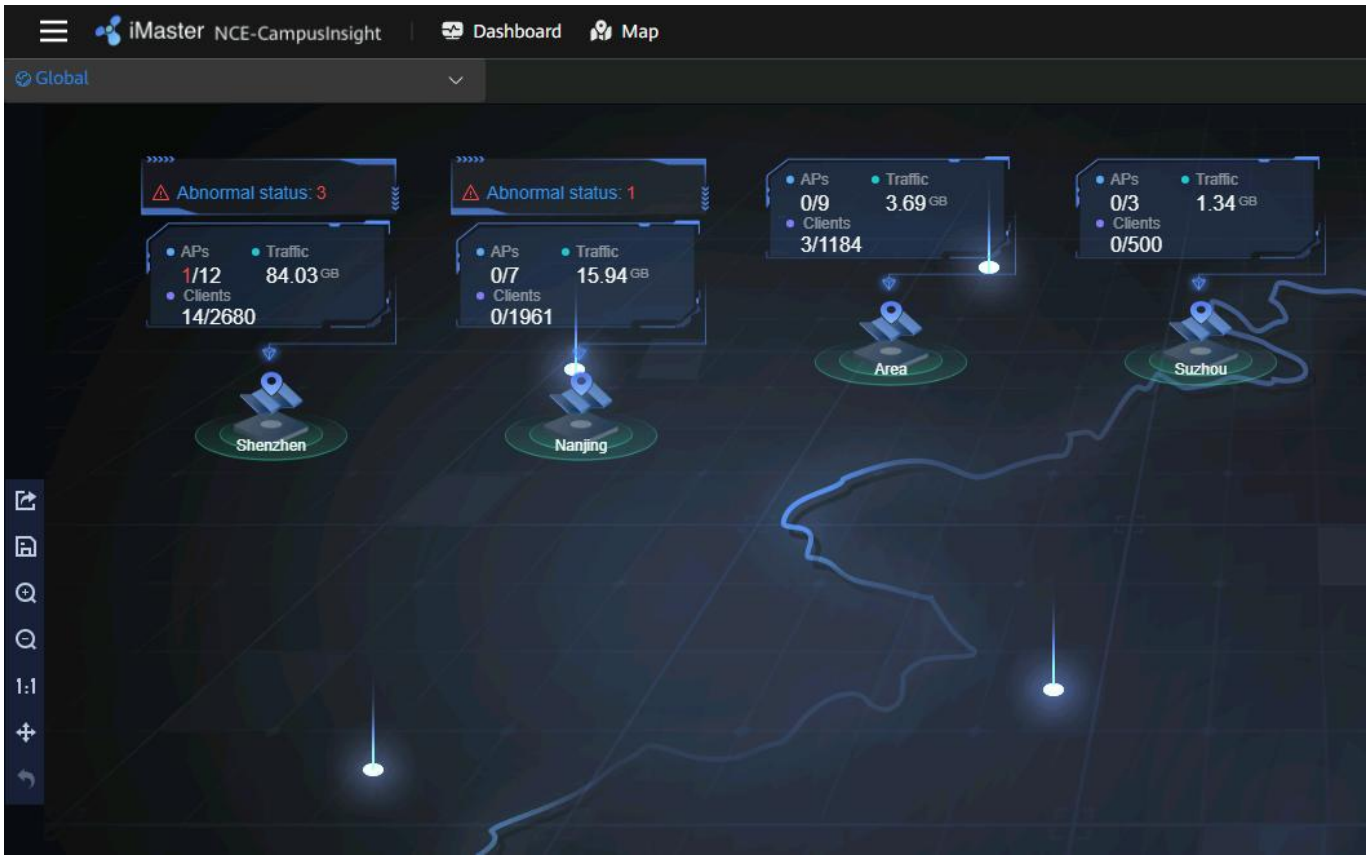
AI roaming performs profile training for terminal roaming behaviors based on big data and reinforcement learning algorithms and implements differentiated roaming steering policies based on terminal models and operating systems. This increases the roaming success rate and reduce packet loss and delay during roaming, improving terminal roaming experience.



3D Building Topology, Clearly Displaying the Network Status

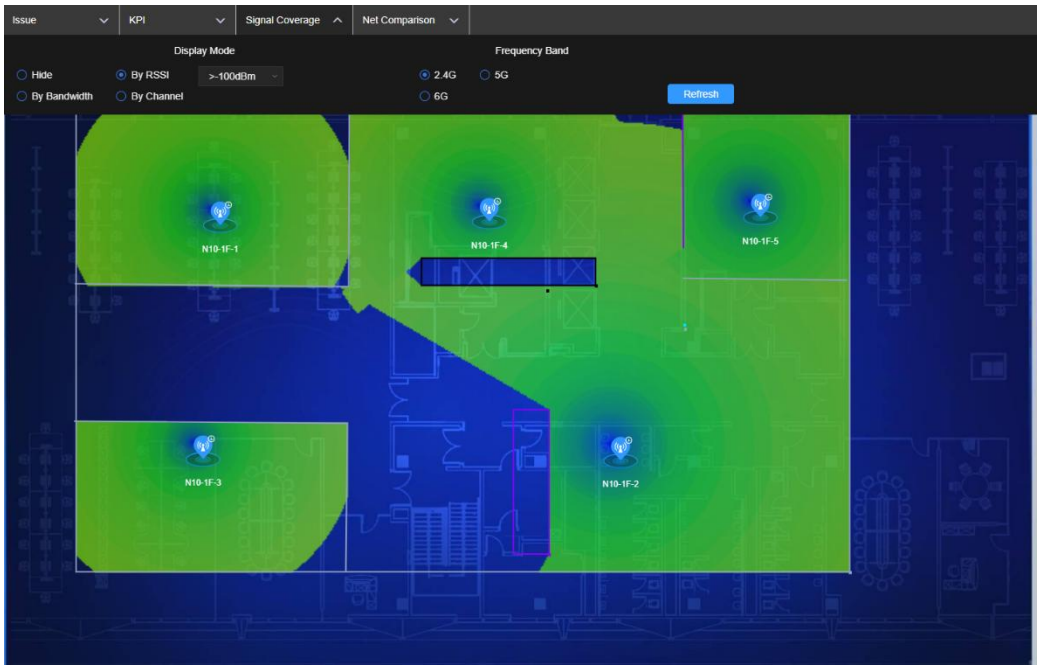
The service topology collects statistics on the status, access, congestion, and error packet issues, as well as displays the number of clients and APs and traffic volume based on sites, regions, buildings, and floors. This

allows administrators to quickly search for and view the buildings that users pass by, helping administrators quickly identify campus network issues.



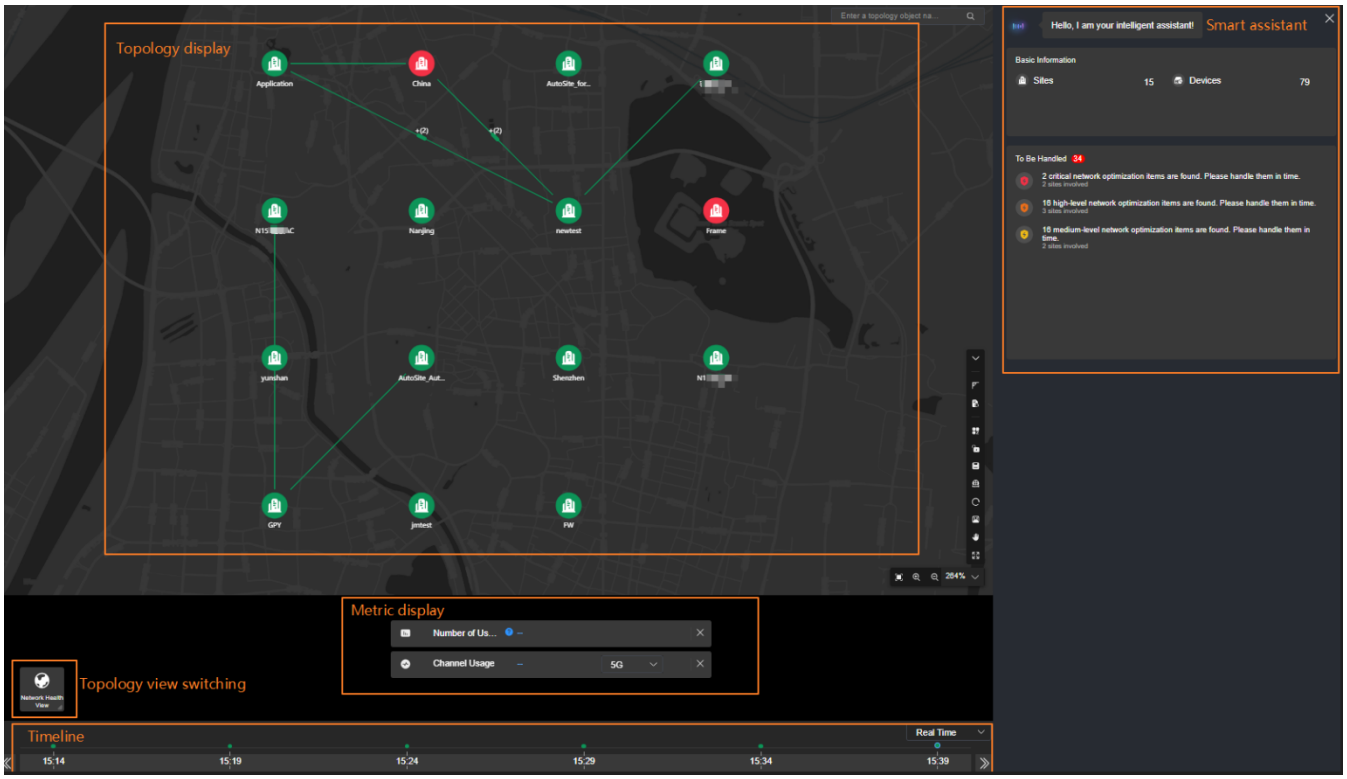
Graphical Topology Management, Intuitively Displaying Issue Distribution

For planned sites and regions, you can view sites, regions, buildings, floors, and APs in the topology, view the radio heatmap based on AP locations, import network planning files, and compare network planning data with actual network running data to view differences. In addition, you can view wireless network health, issues, and KPI data based on the topology, synchronize network planning data from NCE-Campus, including region information, background image, scale, AP locations, and obstacles, as well as customize obstacle types.

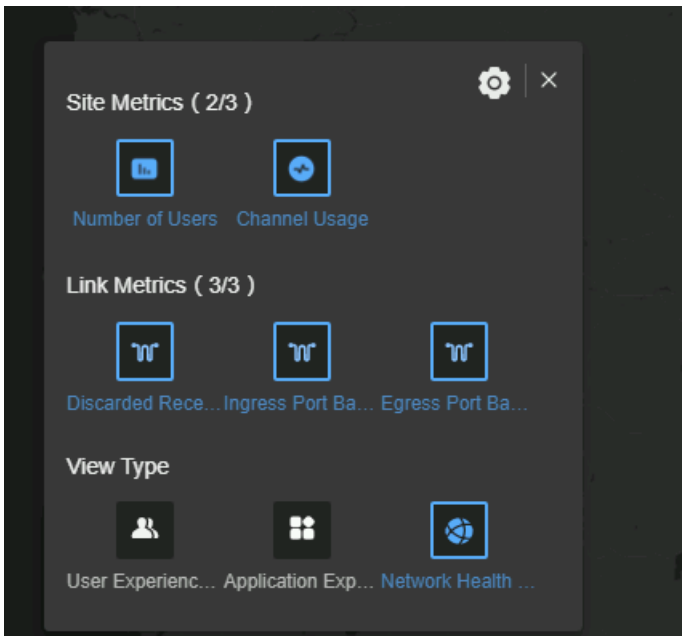


Network Health View

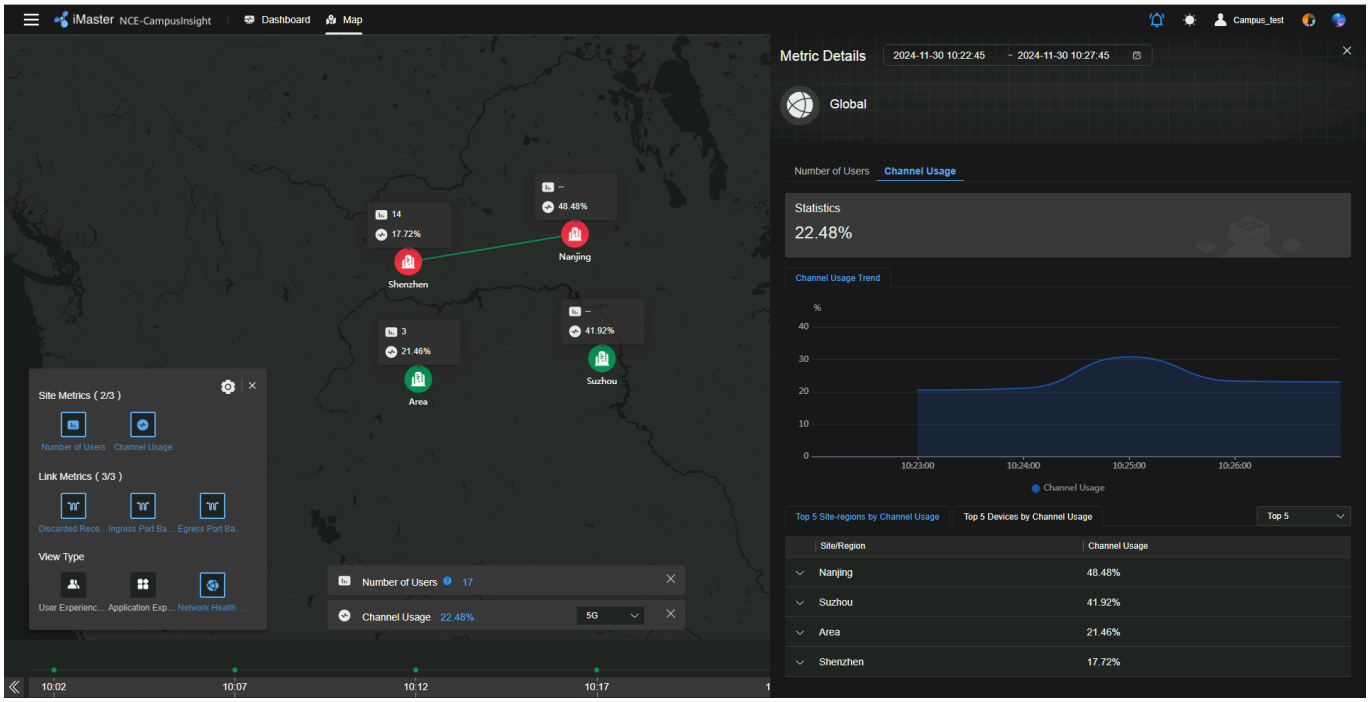
The homepage of the network health view consists of the topology display area, smart assistant, metric display area, topology view switching, and timeline. The smart assistant pane on the right displays basic information and to-dos.



After site and link metrics are selected, metric data details are displayed based on the current view and site.

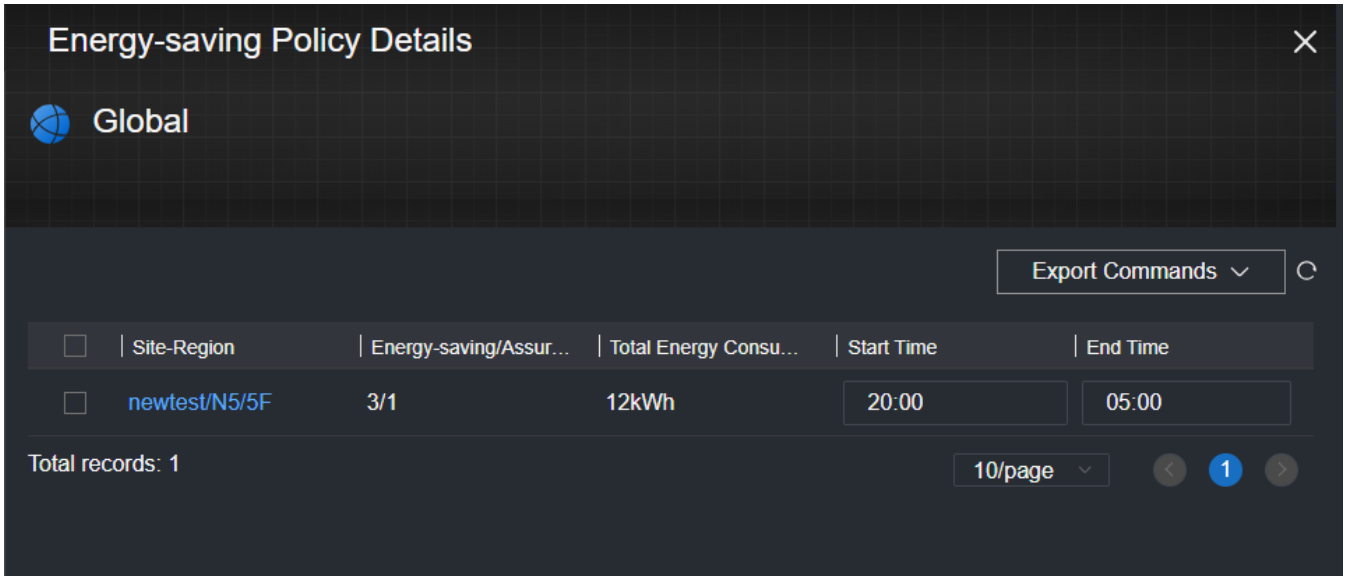


You can double-click a site icon to drill down to the device topology view and check network health metrics in the view. You can also switch to the space view.



Energy Consumption Analysis for Energy-Saving Networks

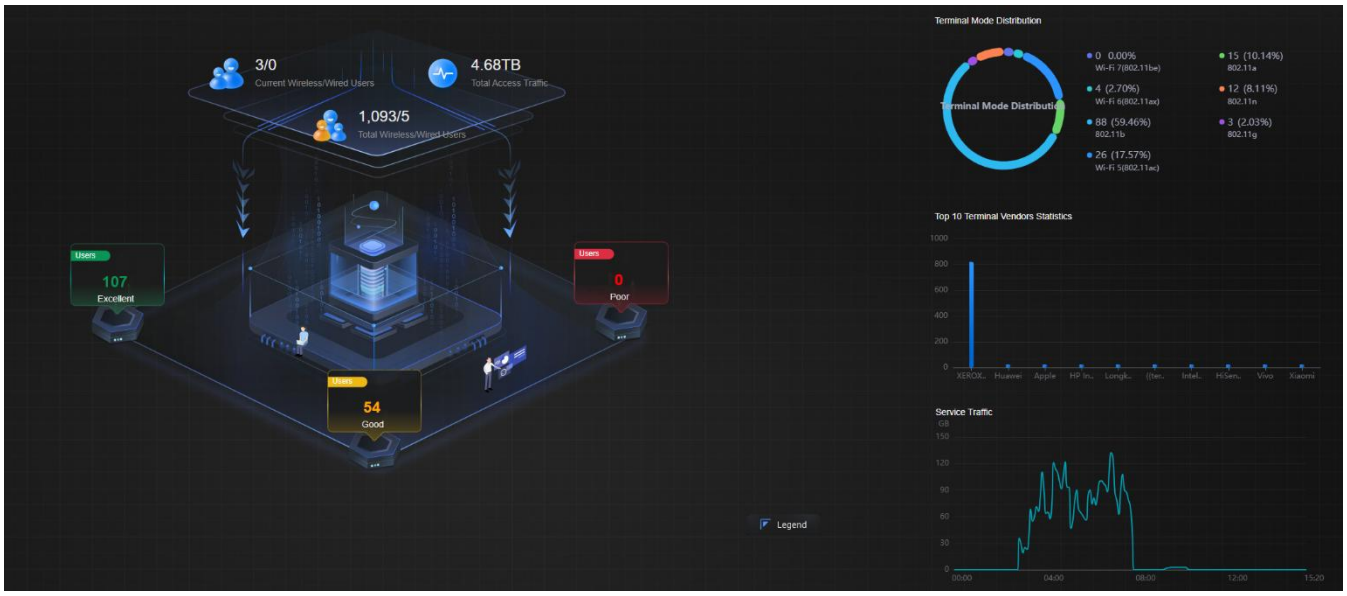
Energy consumption analysis is supported. You can view the energy consumption statistics and trend charts of switches, APs, and ACs on the metric details page. Network tidal prediction information will be generated based on historical network data. In addition, the system will automatically push dynamic energy-saving strategies, including: energy-saving time periods, recommended dormant APs, and sentinel APs.. After the energy-saving strategy is deployed, the sentinel AP continuously monitors whether anyone is connecting. Once a connection is detected, the dormant AP will be awakened.



User Experience View

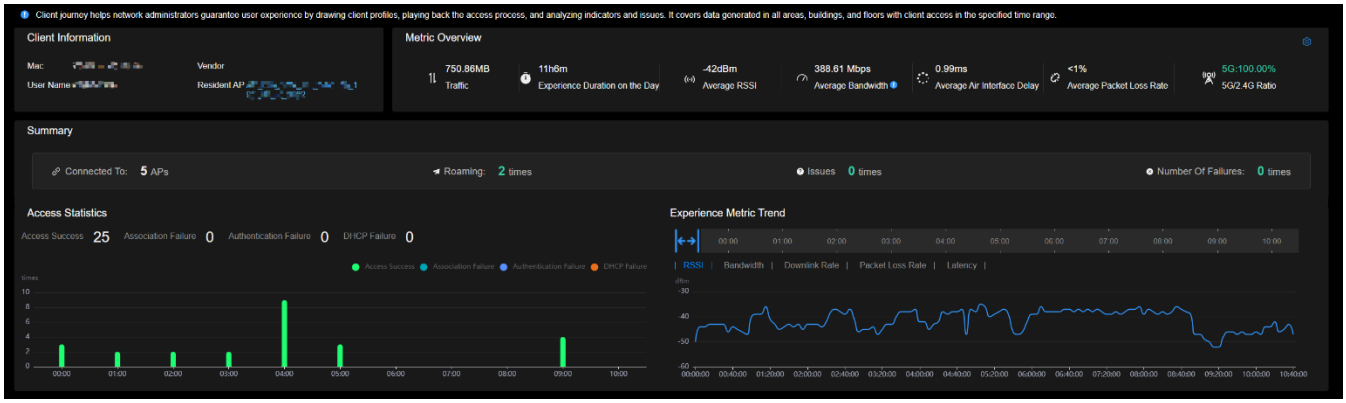
User Overview, Clearly Displaying User Experience Distribution on the Entire Network

On the **Client Overview** page, you can view the Internet access experience quality of all users and perform proactive O&M. You can also view the corresponding information in the normal view and VIP view. In addition, you can view the experience score distributions of the current user and total users, user service traffic change trend, distribution proportion of each terminal mode, and top 10 terminal vendors ranked by terminal quantity.

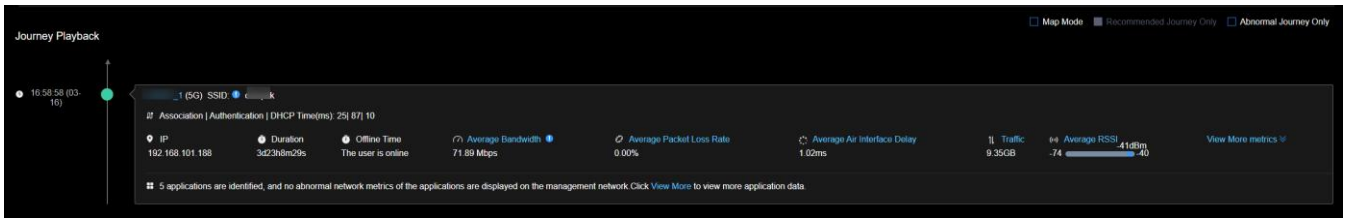


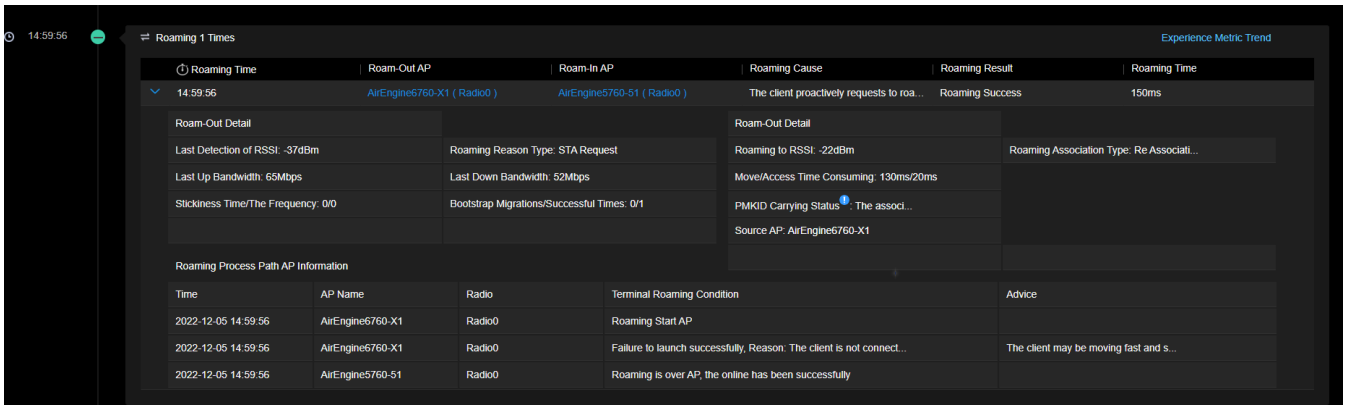
Full-Journey Experience Visualization, Guaranteeing Experience for Each User at Each Moment

Administrators can search for a specific client by the client MAC address and client name. In addition, administrators can draw a profile of a client to view basic client information, metric overview, connectivity issue distribution, and experience trend.



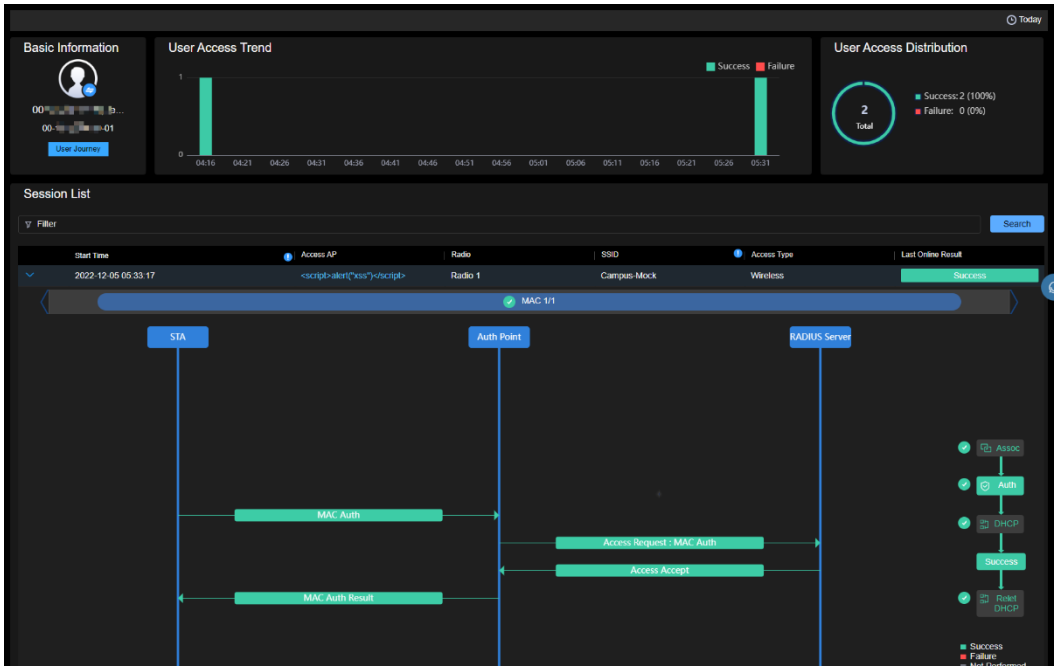
Administrators can draw the client journey based on the client access history. By playing back user experience on the network, administrators can check user experience (who, when, which AP is connected, what is the experience, and what issues occur) on a profound basis. This helps the administrators sense network experience from the user perspective.





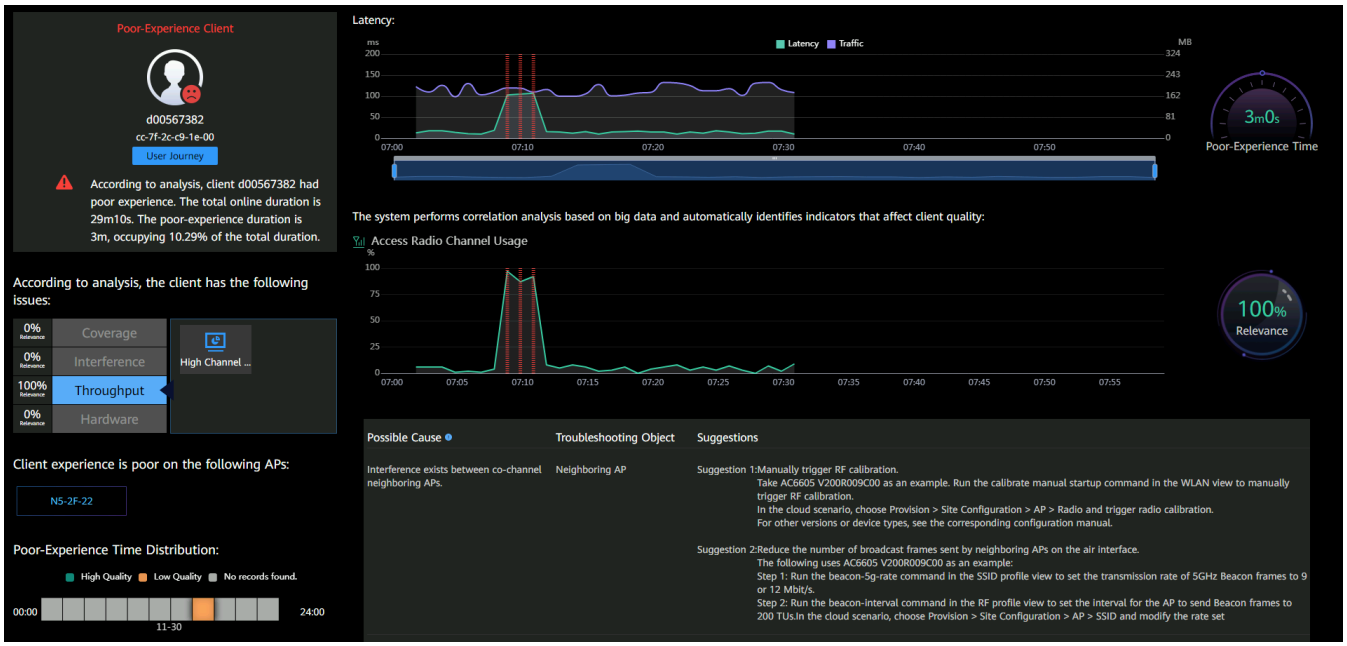
Protocol Tracing, Identifying Individual Connectivity Issue in a Refined Manner

CampusInsight allows you to trace the process for a user to access the network at three phases (association, authentication, and DHCP) and displays the protocol interaction results and consumed time, helping O&M personnel precisely locate the request/response phase where the issue occurs and analyze the user access process in a refined manner.



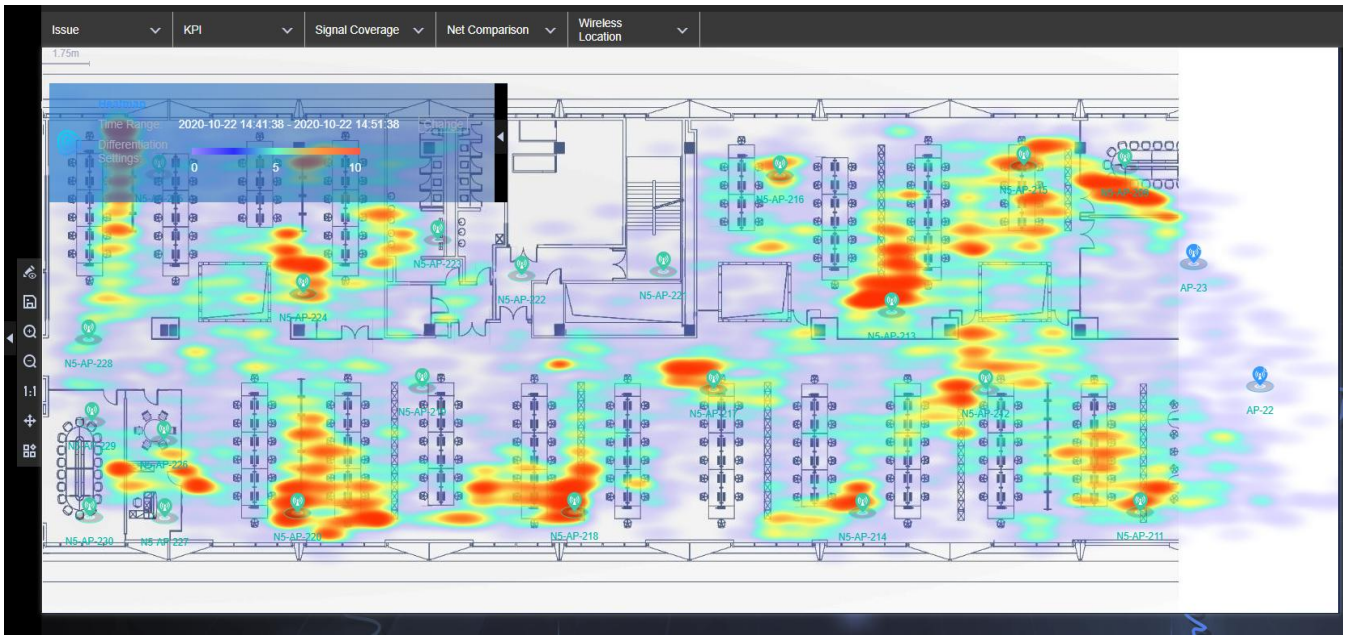
Correlative Analysis of Poor-Experience Users, Mining Potential Issue Causes

CampusInsight can determine poor-experience users based on dynamic learning algorithms and user KPIs. By intelligently classifying network issues (into coverage, interference, throughput, and hardware issues), CampusInsight can identify the internal association between these types of issues and user quality and display quantified correlation KPIs, helping O&M personnel find root causes and potential causes of issues.



RSSI-based Wireless Positioning and Refined O&M Based on Terminal Locations

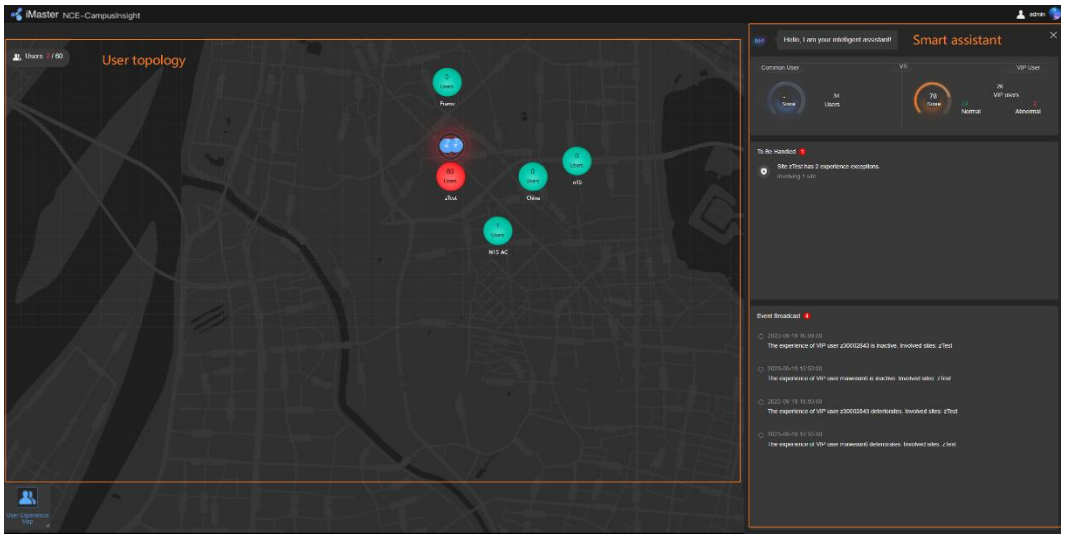
RSSI-based wireless positioning provides the client heatmap, terminal location, and walkable path of each floor, and identifies Wi-Fi interference sources and non-Wi-Fi interference sources, helping O&M personnel quickly rectify faults.



CampusInsight supports location analysis of Wi-Fi users, including the number of detected users (new and old users), frequency distribution, and detection duration distribution. In addition, open APIs are provided to connect to third-party service systems or applications, for example, to identify densely populated areas, such as shopping malls and schools.

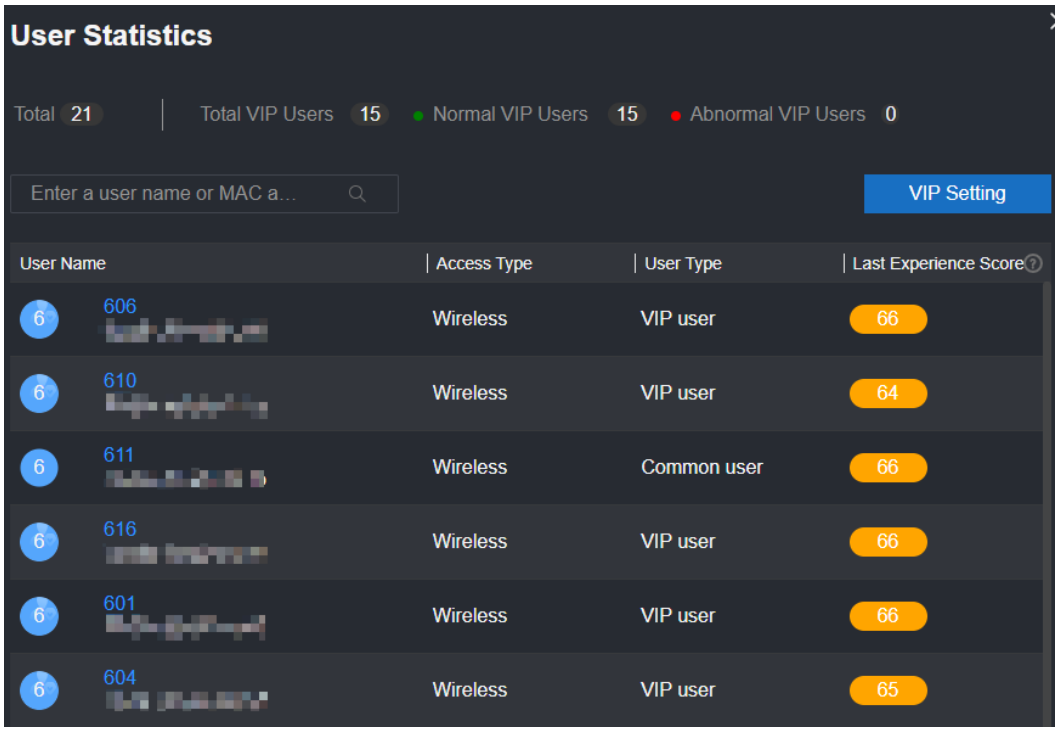
User Experience Map

The homepage of the user experience map displays the site topology, including the number of users and abnormal VIP users at each site. The smart assistant pane on the right displays information about common users and VIP users, to-dos, and event broadcast.

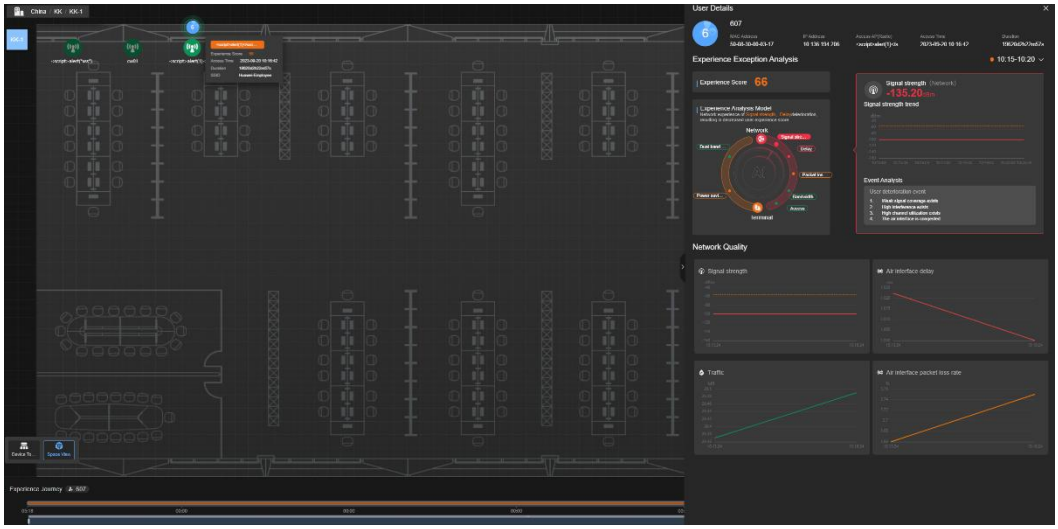


On the user statistics page, you can view statistics about all terminal users, including the total number of users, total number of VIP users, number of normal VIP users, and number of abnormal VIP users. The user

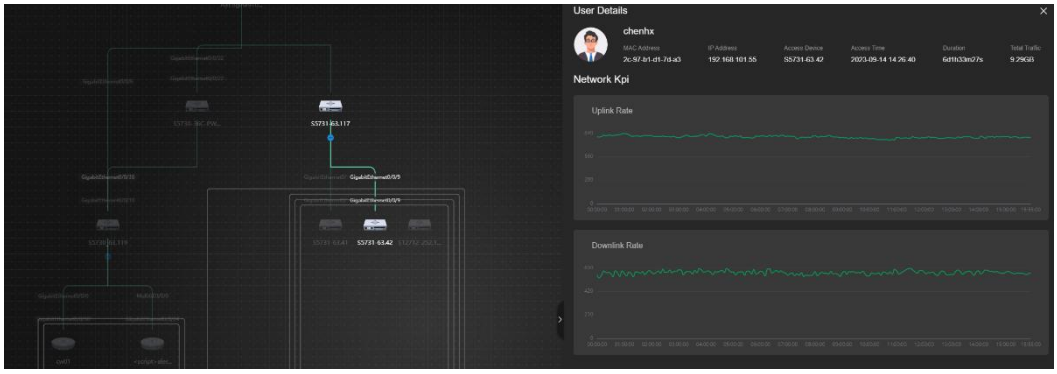
list displays the username, access type, user type, and last experience score. You can set VIP users as required.



For wireless users, you can view their locations in the space view and device topology view. On the **User Details** page, you can view the user information, experience exception analysis result, access application list, and network quality metric trend.



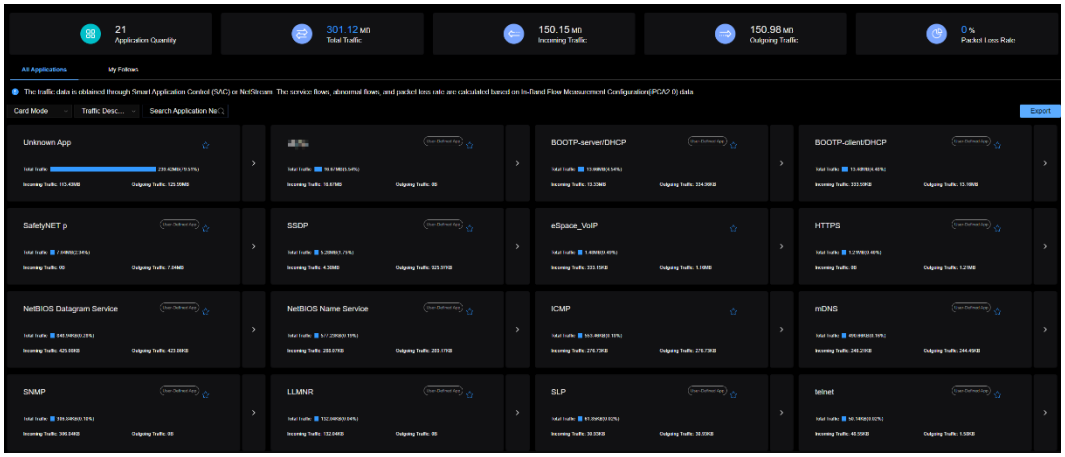
For wired users, you can view their locations in the device topology view. On the **User Details** page, you can view the user information and network quality metric trend.



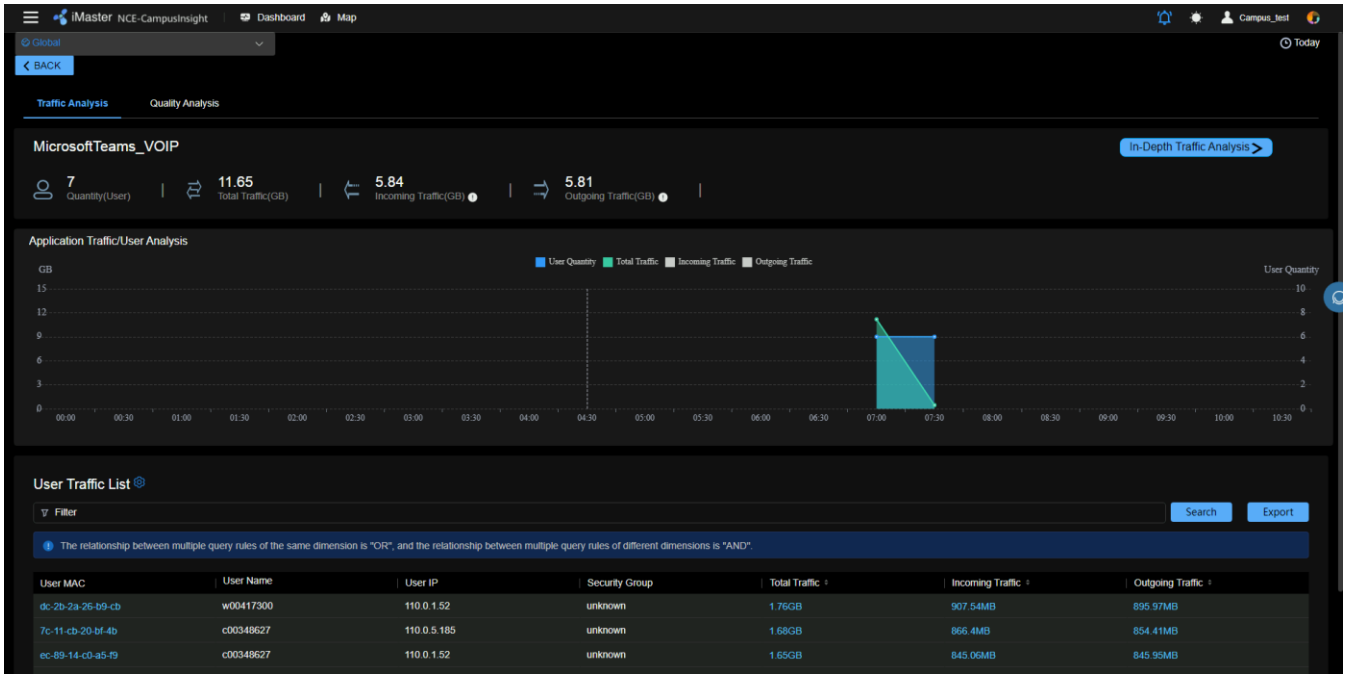
Application Experience View

Real-Time Application Identification, Traffic Analysis, Quality Awareness, and Fault Locating, Ensuring E2E Application Experience from Wi-Fi, LAN, to WAN

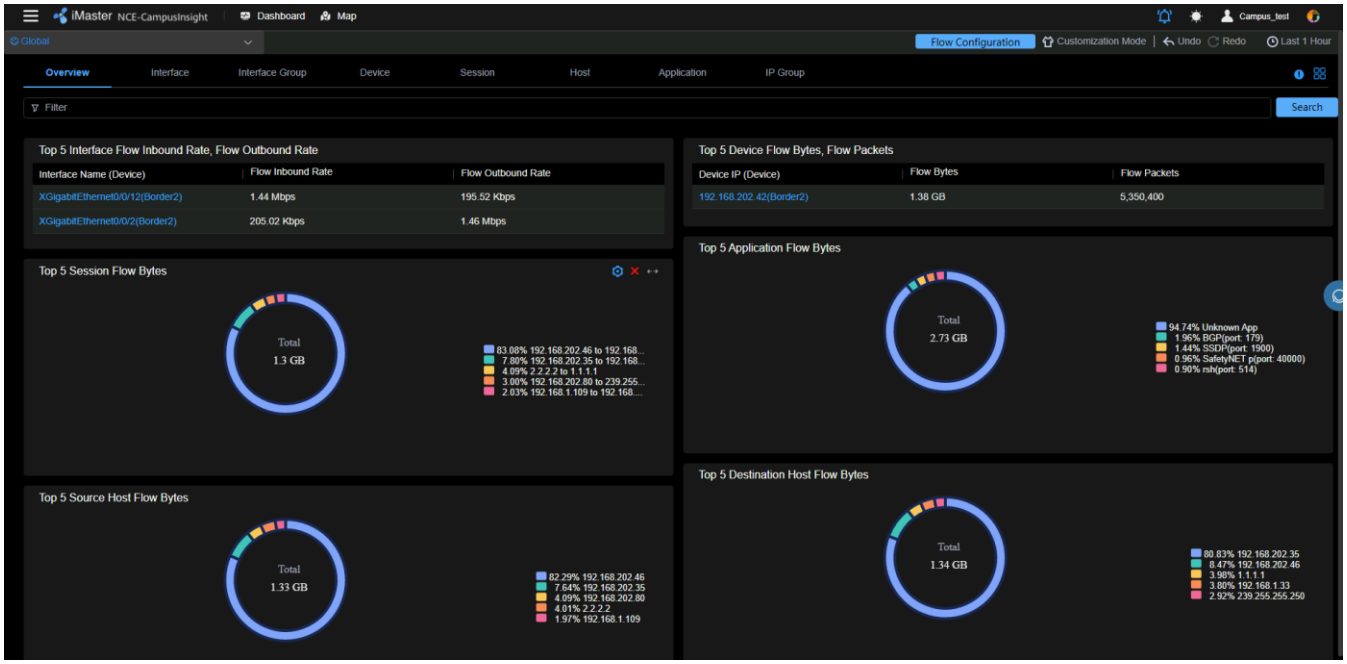
The application identification technology is used to accurately identify 1,000+ mainstream applications on the entire network and their traffic usage, including Teams, DingTalk, WebEX, XYLink, and Skype.



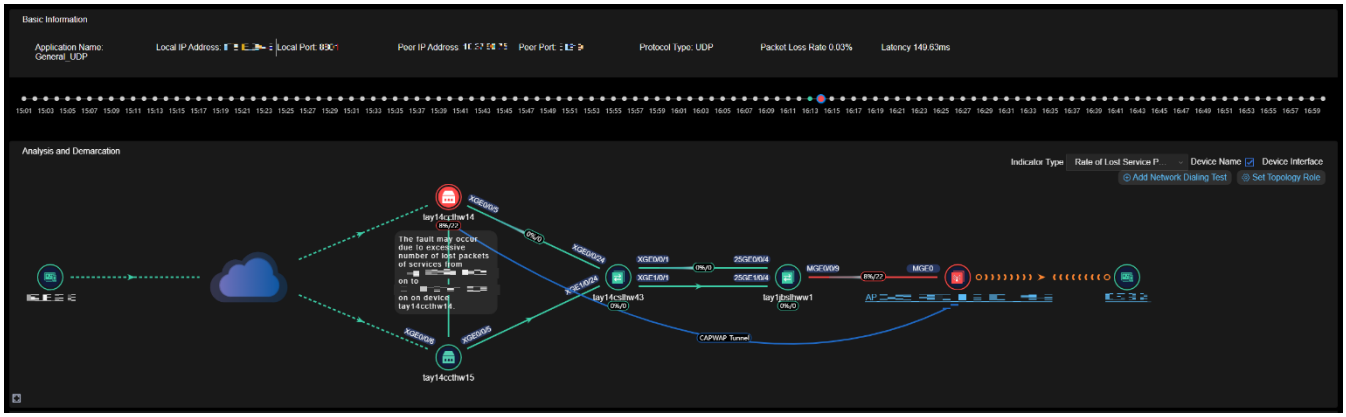
For each application, you can view the traffic usage and specific users of the application. In addition, the application usage of the user can be played back throughout the user journey.



CampusInsight supports multi-dimensional statistics on and analysis of service traffic on networks based on the NetStream technology, meeting users' requirements for more refined network management.

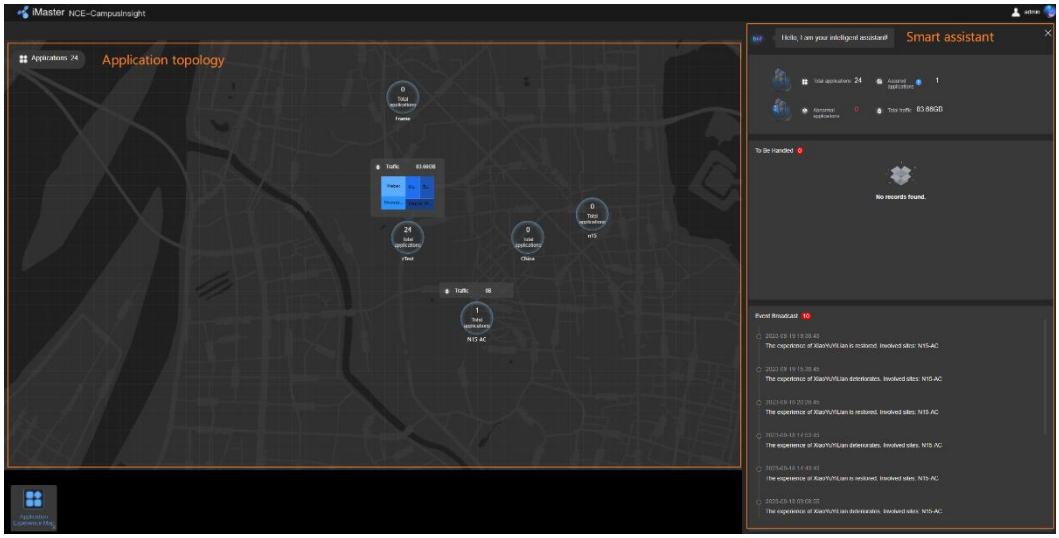


The exclusive iPCA 2.0+IFIT technology and WAN intelligent dialing test capability are used to implement E2E network quality measurement from Wi-Fi, LAN, to WAN based on real service flows and display the real service paths in real time, including devices at both ends and devices and ports that the service flows pass through. In addition, fault pattern analysis is performed on the paths to intelligently demarcate faulty devices or ports in a short time.

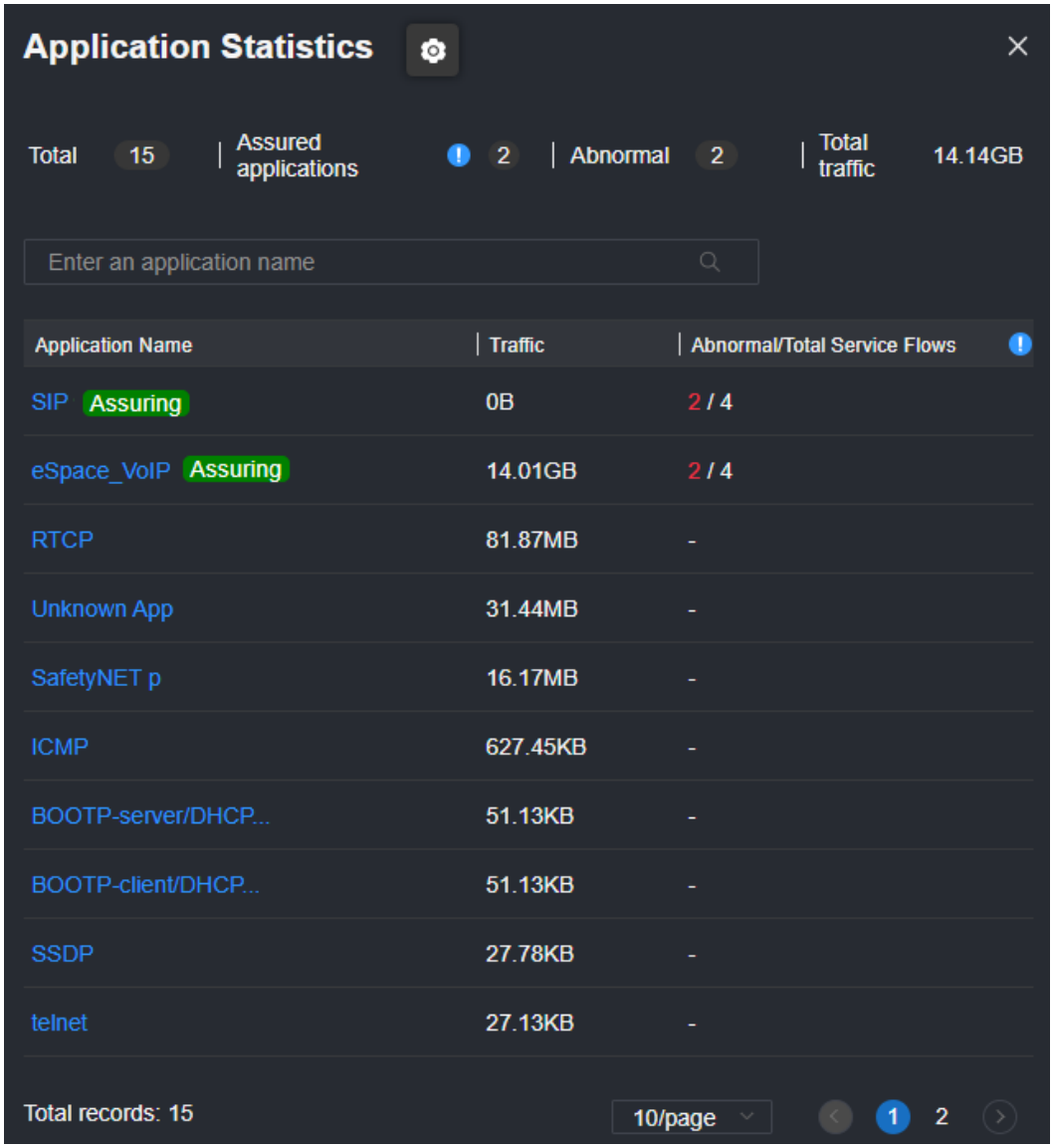


Application Experience Map

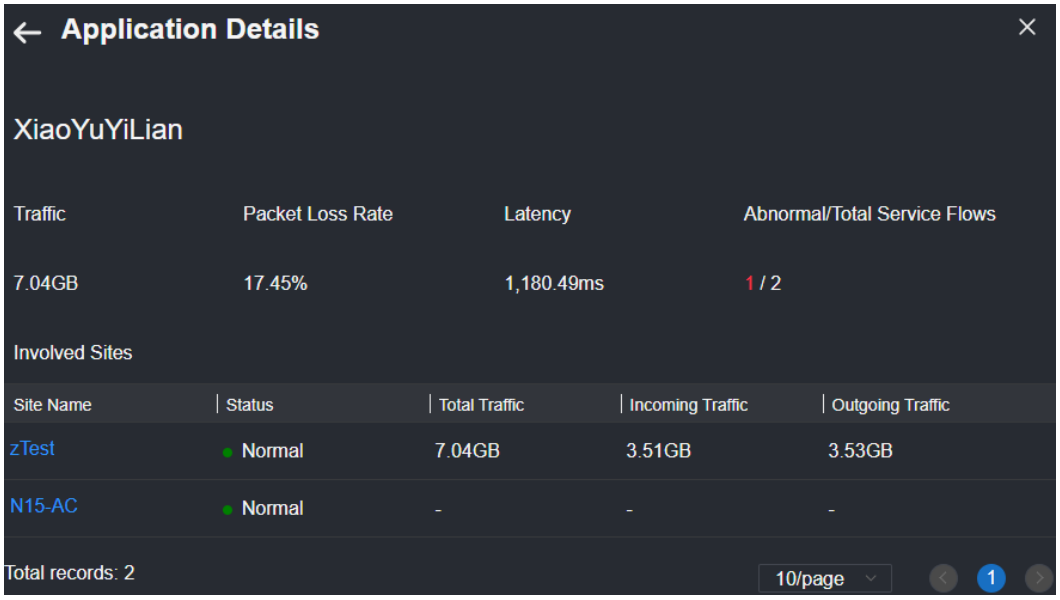
The homepage of the application experience map displays the site topology, including the total number of applications, total traffic, and top N applications with the largest traffic. The smart assistant pane on the right displays the number of applications, traffic, to-dos, and event broadcast.



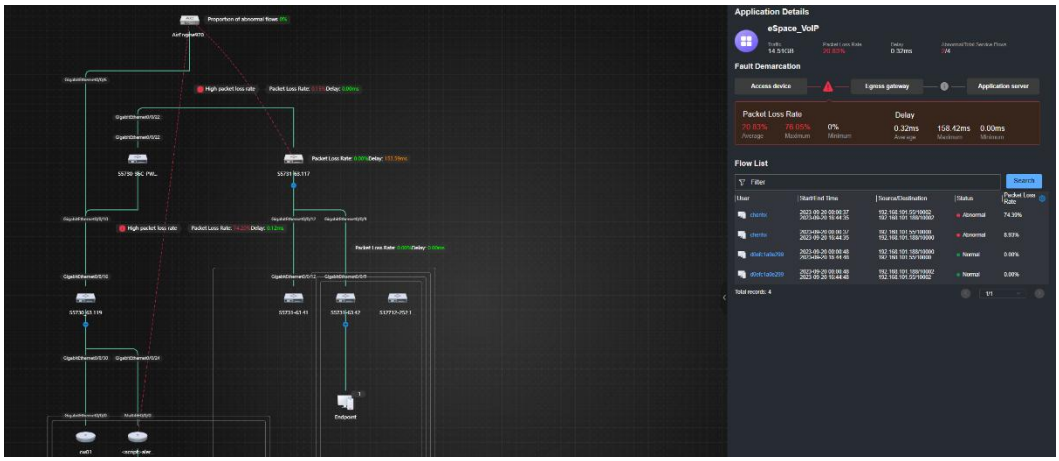
The **Application Statistics** page displays the total number of applications and numbers of normal and abnormal applications. The application list displays the application name, traffic, and total number of abnormal/service flows.



The **Application Details** page displays details about a specific application, including the traffic, packet loss rate, delay, and total number of abnormal/service flows. The **Involved Sites** area displays the site name, status, total traffic, uplink traffic, and downlink traffic.



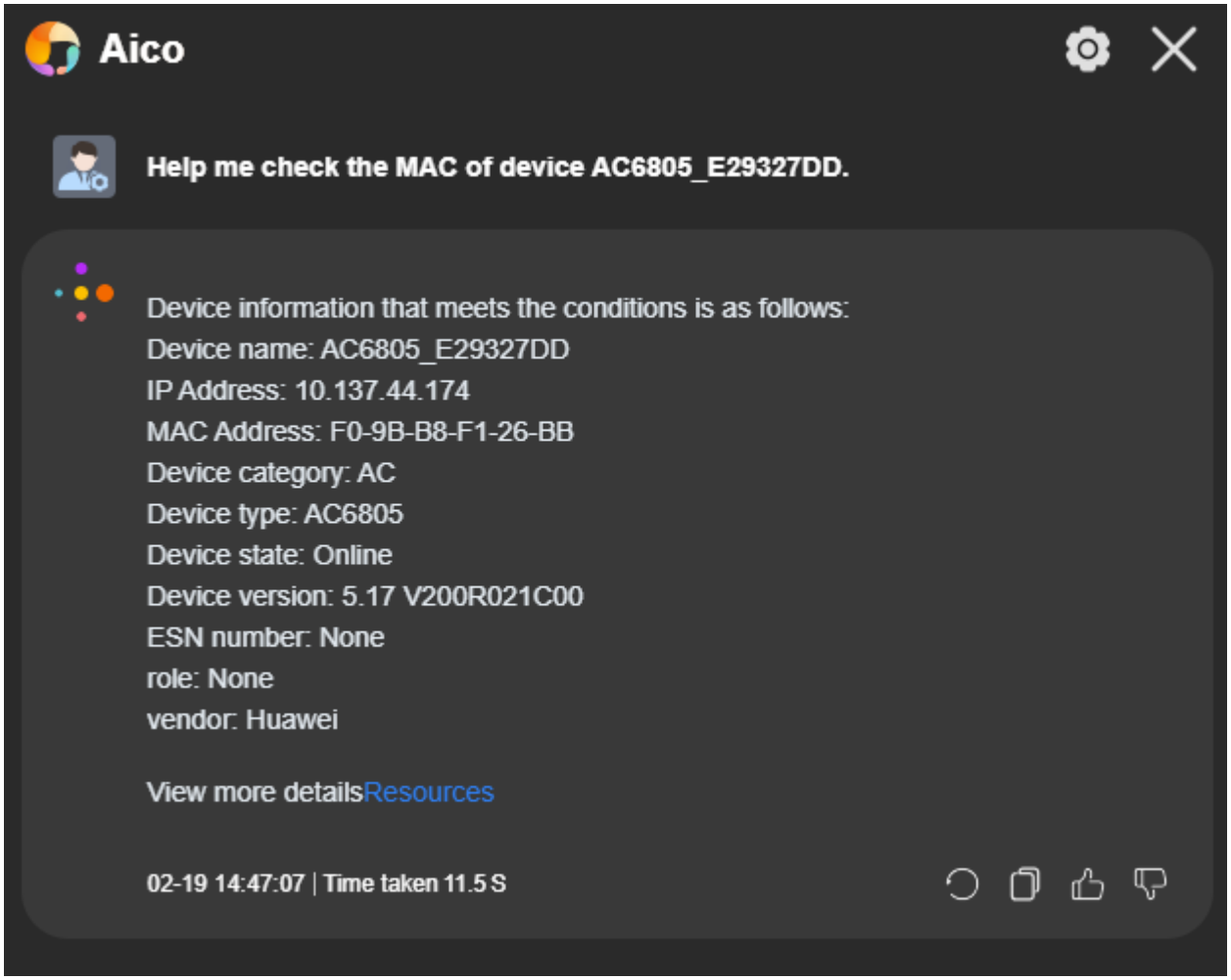
On the application details page of a site, you can view the data and user information about an application at the site.



NetMaster

Network O&M Copilot

Network O&M Copilot integrates the natural language processing technology and knowledge and learning capabilities of communication professional model with CampusInsight, and associates with three experience views to quickly resolve network issues. Dialog-based O&M is provided to implement intelligent O&M for network health query, user troubleshooting and O&M, application quality query, and device monitoring metrics.

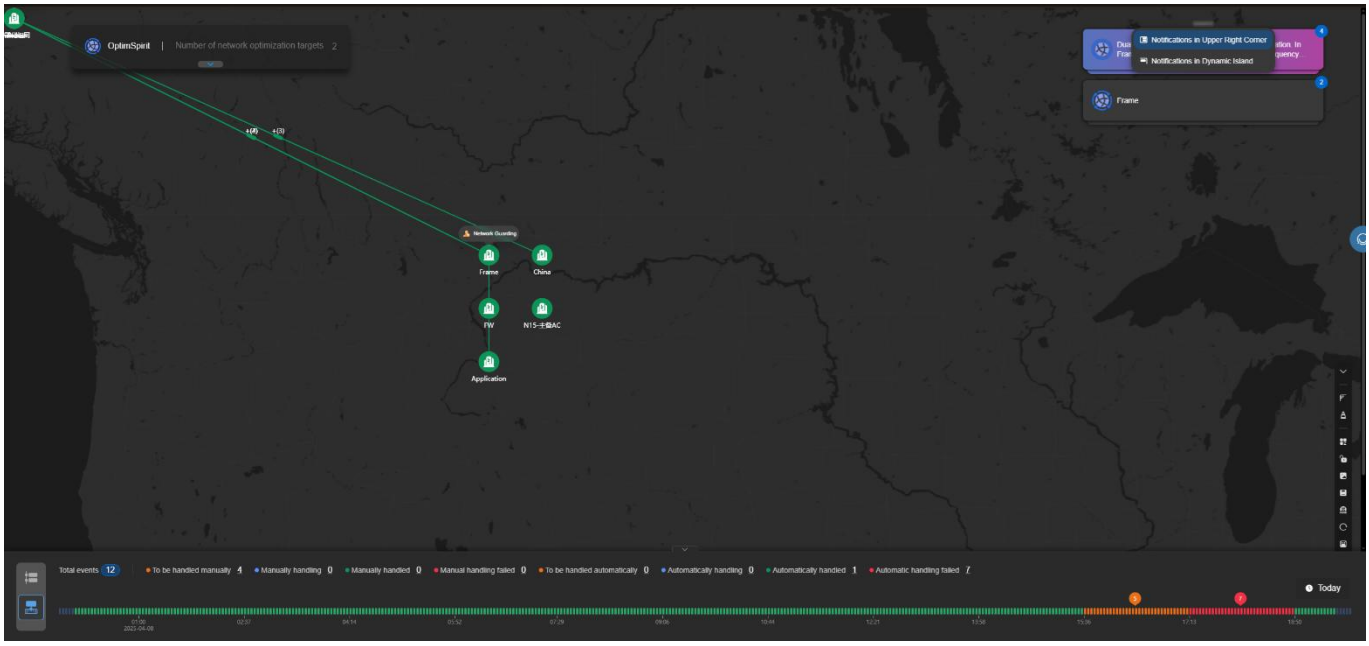


In the scenario where iMaster NCE-Campus is interconnected, if cloud APs are managed, network faults can be rectified in some scenarios. Network O&M Copilot displays the issue analysis chain-of-thought (CoT) and provides a fault rectification solution. After the solution is confirmed by the user, configurations are delivered.

Wi-Fi Optimization Agent

Wi-Fi Optimization Agent uses the Wi-Fi multi-objective collaborative optimization algorithm to avoid slow O&M response and long closure period, improving customer experience and reducing O&M costs.

Wi-Fi Optimization Agent displays the total number of targets and user service quality in the upper left corner of the page. Events in each time segment are displayed on the cockpit auto-protection timeline in the lower part. The pop-up message on the right allows you to view issues to be handled and target tasks. You can click the button above the pop-up message to switch the display position.



Product Composition

CampusInsight provides basic packages and value-added packages. The basic package provides the following functions.

Key Feature	Description
Network health	1. You can view the overall health status of the entire network and the number of uncleared issues. 2. The health trend of the entire network within a specified time range can be viewed. 3. You can view the health status and change trends of devices and networks in the current and specified time ranges, as well as the health of performance, capacity, and status issues in each resource dimension. 4. You can view the health analysis details in each dimension, including the overall analysis conclusion and specific issue detection result. 5. You can click the description of a check item to quickly switch to the issue list and view the issue details. 6. You can click the issue details to view the original event details.

Key Feature	Description
	7. The functions, such as device management, southbound interconnection, installation, upgrade, and capacity expansion, on the service and management planes support IPv6. 8. Three-level evaluation results (excellent, good, and poor) are provided based on the following wireless health evaluation metrics: access success rate, access time consumption, signal and interference, capacity, roaming, and throughput. 9. Root causes are analyzed based on the following metrics: association/authentication/DHCP success rate, time required for association/authentication/DHCP, signal strength, channel utilization, number of users, bandwidth, roaming success rate, roaming duration, signal strength before roaming, interference rate, air interface congestion fulfillment rate, and non-5G-prior access. 10. You can view metric rankings and trends, root causes of issues, and details about metrics. 11. Health evaluation data can be compared at the same level (site or region), by time (time segments with the same span), or by month (select two months). 12. Data analysis supports associated display of issues, data clustering (including AP clustering, user clustering, and SSID clustering), and identification of faulty terminals and APs to improve running efficiency. 13. You can set the health evaluation report notification rule. A health evaluation report can be sent to users or directly downloaded. If a report needs to be sent to users, you can set it to be sent periodically or immediately.
Network issue analysis	1. The **Pending Issues** tab page can display all issues that are not cleared or acknowledged. 2. The **Historical Issues** tab page can display issues that have been cleared and acknowledged. 3. You can click an issue to display its details, including basic information, root cause, and impact analysis. 4. CampusInsight identifies network issues and provides root cause analysis and rectification suggestions for the issues, including network policies, network protocols, network performance, and network status. 5. Device status and device environment issues can be identified and analyzed. 6. Group issues on the network can be identified and root cause analysis and suggestions are provided for the issues, including authentication and DHCP issues. 7. Through packet loss visualization, O&M personnel can quickly detect packet loss due to abnormal forwarding, specified packet discarding rules, full buffer, or deny action in ACL rules, implementing quick fault locating. 8. AP-level spectrum analysis is supported. 9. You can view the numbers, impacts, distributions, and details of connectivity, air interface performance, and roaming issues. 10. CampusInsight collects statistics on and analyzes the inter-site EVPN

Key Feature	Description
	connection down event in SD-WAN scenarios and link metrics such as the delay, packet loss rate, and jitter, as well as quickly demarcates faults on overlay and underlay networks.
Network health view	CampusInsight provides real-time data monitoring and historical data backtracking based on metrics displayed in the network health view so that O&M personnel can set thresholds for key monitoring metrics and objects to check whether network metrics deteriorate.
VIP experience assurance	1. CampusInsight specifies key users as VIPs for management. 2. CampusInsight connects to the Srun server to obtain usernames. 3. All access users within the management specifications and access users in the last 5 minutes can be viewed.
User journey	1. The user journey information can be viewed, including the client information, metric overview, access trend statistics, experience metric trend, journey summary, and access history. 2. User access can be analyzed by time, including wired devices or APs connected at different time points and the corresponding analysis data, such as the duration, traffic, signal strength, rate, and channel utilization.
Protocol trace	The user access process is analyzed at the protocol level, including the interaction result and time consumption between terminals and devices at each phase, and possible causes and rectification suggestions for interaction failure scenarios are provided.
Dashboard	1. The dashboard proactively monitors information such as the network status and traffic. 2. Overview information is displayed on the homepage and portals are customized by user, device, and Wi-Fi 6 dashboard. 3. The numbers of association, authentication, and DHCP failures during user access are displayed. 4. Metric statistics on quality-based traffic steering and load balancing-based traffic steering are supported in SD-WAN scenarios. 5. Reports are visualized page creation services provide abundant visualization components, flexible data access, and multiple page creation modes, helping you quickly create and publish professional and real-time visualization applications. You can create large-screen service pages in minutes through one-stop visualized data development on Reports.

Key Feature	Description
Service topology	1. Network access issues, network congestion issues, device status issues, and network error packet issues can be viewed from the building perspective. 2. User search is supported from the building perspective and information about buildings that a user passes through in a period of time can be displayed. 3. Sites, regions, buildings, floors, and APs in the topology can be viewed. 4. You can import network planning files and background images, and set the scale. 5. Radio heatmaps can be viewed based on AP locations. 6. Network planning data can be compared with the actual network running data to show the differences. 7. The wireless network health, issues, and KPI data can be viewed based on the topology. 8. Network planning data can be synchronized from NCE-Campus, including region information, background image, scale, AP location, and obstacles. 9. The obstacle type can be customized.
Physical topology	1. Sites, regions, buildings, and devices in the topology can be viewed. 2. The numbers of wired issues and wireless issues, average signal strength, and number of wireless users in the topology can be viewed. 3. Device link information (link status and bandwidth usage) in the topology can be viewed.
Network dialing test	1. The CloudCampus APP is used to perform terminal dialing tests on wireless networks. CampusInsight displays the dialing test results of terminals. 2. The NQA network dialing test capability is provided to detect network quality, such as network connectivity, delay, and packet loss. ICMP echo and DHCP test instances are included.
Dashboard	1. User-defined views are supported. 2. Physical screens can be created. 3. Large-screen carousel is supported.
Northbound interface	Different secondary development capabilities are provided based on data characteristics. Three types of interfaces can open the raw data and analyzed data to third-party systems, including network O&M and IT service systems, thereby offering richer intelligent analysis data. 1. RESTful NBI: opens resource data (devices, interfaces, links, and boards), health data (health issues and health evaluation), and terminal session data. 2. SNMP NBI: reports alarm data to a third-party system over SNMP. 3. Kafka NBI: consumes data collected by CampusInsight using Telemetry through the consumer API provided by Kafka.

Value-added packages are classified into the application analysis value-added package for intelligent network analysis, network optimization and self-healing value-added package for intelligent network analysis, energy consumption analysis value-added package for intelligent network analysis, intelligent O&M assistant value-added package for intelligent network analysis, and wireless location value-added package.

The following table lists the functions of the application analysis value-added package for intelligent network analysis.

Key Feature	Description
Application analysis	1. More than 6000 applications, such as web conferencing (Zoom and Tencent Meeting), instant messaging (DingTalk_IM), and social networking (Facebook), as well as user-defined applications can be identified by type and name. For details, see the signature database specifications of the corresponding device. 2. The system can analyze and collect statistics on the traffic of different applications by site and region, including the total, incoming, and outgoing traffic. 3. Traffic analysis is supported for interfaces, devices, sessions, hosts, applications, interface groups, IP address groups, and SD-WAN. 4. Integrated analysis of LAN and WAN applications is supported and quality data such as the delay, packet loss, and jitter of TCP and non-encrypted RTP applications can be displayed. 5. Application quality data can be displayed by application or region. 6. Actual service paths of application flows in the physical topology can be displayed and key metrics of devices and ports on the paths can be analyzed, including the packet loss, delay, and jitter. 7. When the poor quality of applications is detected, application faults can be located and demarcated, failure points on service paths can be displayed, and possible causes of some faults can be analyzed. 8. The in-band flow measurement capability for the backbone network is supported.

The following table lists the functions of the network optimization and self-healing value-added package for intelligent network analysis.

Key Feature	Description
Network optimization and self-healing	1. The network deployment density is identified to recommend optimal frequency bandwidth. 2. Differentiated roaming steering is provided for different models of terminals through big data analytics, thereby improving terminal roaming experience. 3. Weak-coverage APs on networks are identified to recommend the optimal power and improve terminal network experience. 4. Intelligent algorithms are used to identify high-load APs on networks, evaluate the interference impact of high-interference APs, and deliver decision-making data to devices. In the device calibration phase, calibration is completed by referring to decision-making data delivered by the analyzer. 5. Predictive big data calibration and display of calibration benefits are

Key Feature	Description
	supported.

The following table lists the functions of the energy consumption analysis value-added package for intelligent network analysis analysis.

Key Feature	Description
Network energy consumption analysis	1. Based on the historical network data reported by devices, CampusInsight calculates the devices that require energy saving and the energy-saving periods. You can run commands to deliver configurations and control the power-on and power-off of APs through the controller. 2. The energy consumption data and trend are displayed by device. Energy consumption visualization is supported for switches, ACs, and APs. You can view data of top 5 or all site-regions. 3. The energy consumption data and trend are displayed by site-region. You can view data of top 5 or all site-regions. 4. You can select a time range to view comparison charts of energy consumption and energy efficiency ratio.

The following table lists the functions of the Network O&M Copilot value-added package for intelligent network analysis analysis.

Key Feature	Description
Network O&M Copilot	1. Provide natural language interaction for metric queries and troubleshooting, where metric queries include basic device information, network element metrics, user lists, wireless health metrics, energy consumption information, and application metrics. Troubleshooting includes network issue inquiries, user issues, and application troubleshooting.

The following table lists the functions of the Wi-Fi Optimization Agent value-added package for intelligent network analysis analysis.

Key Feature	Description
Wi-Fi Optimization Agent	1. Provide the creation of optimization objectives for site areas, selection of optimization strategies, and setting of monitoring thresholds. 2. Display the created target tasks and the details of task achievement. The overall quality of user service is the target's general status, with compliance status shown across four dimensions: signal strength, downlink bandwidth, roaming success rate, and interference rate. The cockpit's automatic monitoring timeline allows viewing of events at various time intervals.

The following table lists the functions of the wireless location value-added package.

Key Feature	Description
RSSI-based wireless positioning	• The client heatmap based on a specified time period can be displayed. • The locations of all Wi-Fi-enabled terminals, the location of a single user, and the walkable path in a specified period can be viewed. • Terminal MAC addresses can be anonymized. • Wi-Fi interference sources and non-Wi-Fi interference sources can be located, including identifying and displaying interference source locations. • Wi-Fi user location analysis is supported, including the number of detected users (new and old users), frequency distribution, detection duration distribution, user capture rate, and user association ratio. Constraints: • Only Wi-Fi RSSI-based location is supported. • Wireless location applies only to indoor scenarios instead of outdoor scenarios • The location accuracy can be 60% (independent radio scanning) or 50% (non-independent radio scanning) within 10 m, and the location delay is within 20 seconds. • Wireless location data can be stored for a maximum of seven days.

Networking Application

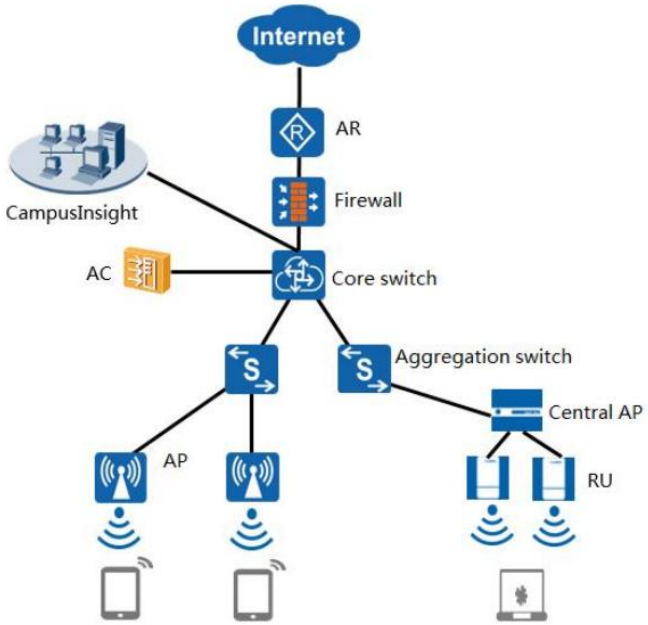
The supported networks are as follows:

- All WLAN ACs (including native ACs) + Fit APs
- All WLAN ACs (including native ACs) + Central APs + RUs
- X7/X3-series switches
- AR routers

Note: CampusInsight does not support wired networks in SVF networking.

Note:

- To identify DHCP-related connectivity issues, you need to use the AC as a DHCP server or enable DHCP Snooping on the AC.



Subscription Information

Module		Type	Description
Software subscription	**Software Package**		
	Basic package of intelligent network analysis	Mandatory	Purchased based on the NE type and quantity.
	Application analysis value-added package for intelligent network analysis	Optional	Purchased based on the NE type and quantity.
	Network optimization and self-healing value-added package for intelligent network analysis	Optional	Purchased based on the NE type and quantity.
	Energy consumption analysis value-added package for intelligent network analysis	Optional	Purchased based on the NE type and quantity.
	Network O&M Copilot value-added package for intelligent network analysis	Optional	Purchased based on NCE-CampusInsight, One license for one set of NCE-CampusInsight.

Module		Type	Description
	Wi-Fi Optimization Agent value-added package for intelligent network analysis	Optional	Purchased based on the NE type and quantity.
	Wireless location value-added package	Optional	Purchased based on the NE type and quantity.
	Software subscription and support (SnS)		
	Basic package of intelligent network analysis-SnS	Mandatory	This item corresponds to the basic package of network intelligent analysis. The quantity is the same as that of the basic package of network intelligent analysis.
	Application analysis value-added package for intelligent network analysis-SnS	Optional	This item corresponds to the application analysis value-added package for intelligent network analysis. The quantity is the same as that of the application analysis value-added package for intelligent network analysis.
	Network optimization and self-healing value-added package for intelligent network analysis-SnS	Optional	This item corresponds to the network optimization and self-healing value-added package for intelligent network analysis. The quantity is the same as that of the network optimization and self-healing value-added package for intelligent network analysis.
	Energy consumption analysis value-added package for intelligent network analysis-SnS	Optional	This item corresponds to the energy consumption analysis value-added package for intelligent network analysis. The quantity is the same as that of the energy consumption analysis value-added package for intelligent network analysis.
	Network O&M Copilot value-added package for intelligent network analysis-SnS	Optional	This item corresponds to the Network O&M Copilot value-added package for intelligent network analysis. The quantity is the same as that of the Network O&M Copilot value-added package for intelligent network analysis.
	Wi-Fi Optimization Agent value-added package for intelligent network analysis-SnS	Optional	This item corresponds to the Wi-Fi Optimization Agent value-added package for intelligent network analysis. The quantity is the same as that of the Wi-Fi Optimization Agent value-added package for intelligent network analysis
	Wireless location value-added package-SnS	Optional	This item corresponds to the wireless location value-added package. The quantity is the same as that of the wireless location value-added package.

Module		Type	Description
Hardware subscription	Analyzer server	Optional	This item indicates the number of servers required by the CampusInsight analyzer.

CampusInsight provides a three-month free trial license. To apply for a license for trial, visit the Huawei ESDP platform at http://app.huawei.com/isdp/.

More Information

For more information about Huawei CampusInsight, visit http://e.huawei.com or contact Huawei's local sales office.

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