



# H3C SeerAnalyzer

## (Data Center Scenario)

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New H3C Technologies Co., Limited

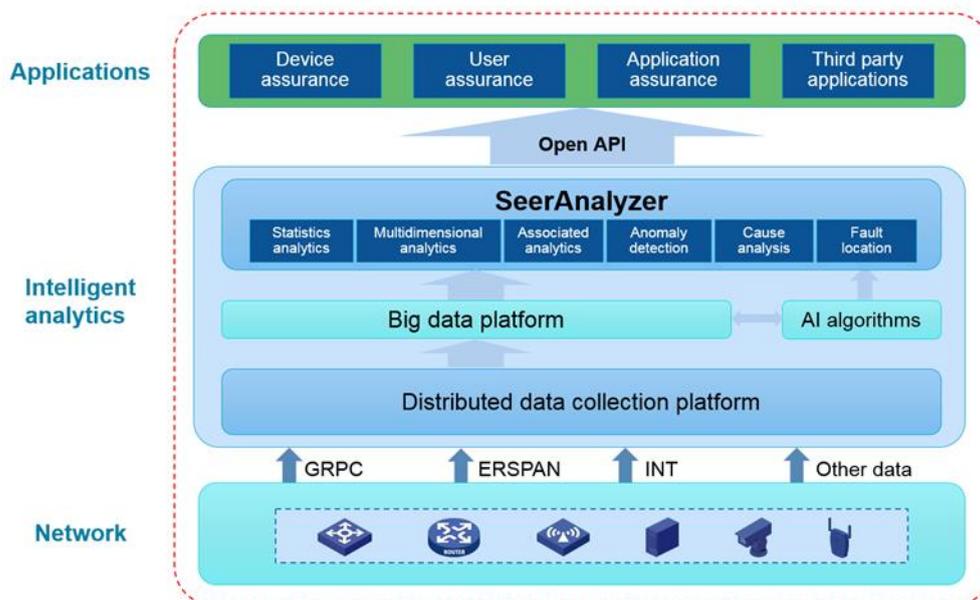
## Product overview

Traditional O&M faces great challenges as the network grows rapidly in scale and complexity and services are more demanding for network availability and minimized downtime. SeerAnalyzer is developed at this right moment to deliver a big data and AI-powered analytics solution that enables automated and streamlined O&M.

Embracing Telemetry, big data technologies and big data distributed computing engines, expert knowledge, and scenario-based AI algorithms, SeerAnalyzer automates network data collection and analytics and provides insights into the overall network conditions. It also helps identify root causes of issues and can predict failures for key components or modules. It has open APIs through which it provides the collected data and analytics results to the upper layer applications.

Incorporating the high-speed data acquisition and real-time fault identification capabilities of Telemetry and in combination with network O&M technologies and experiences, SeerAnalyzer enables fast issue location and isolation, which minimizes the network downtime and ensures service continuity.

## Architecture



## Features and benefits

### All-round data acquisition

- With the distributed deployment architecture, SeerAnalyzer can expand data collection flexibly. The data analysis platform built with components such as Kafka and Flink meets data collection needs of networks of any size, and delivers analytics capability of up to millions of streams per minute.

- Incorporating second-level data collection capacity of gRPC Telemetry, SeerAnalyzer provides visibility to the network operating status in real time.
- SeerAnalyzer can use Telemetry to collect and record network performance data during the user access process and allow you to trackback the data at any historical moment.
- Embracing new application data stream collection technologies such as ERSPAN and INT, SeerAnalyzer can collect data about network transmission quality for insights into application traffic and analytics about application quality.
- In addition to traditional network management data collection protocols, SeerAnalyzer supports varieties of advanced data collection technologies, allowing comprehensive or specific data collection as needed.

## Big data-powered

- SeerAnalyzer uses big data technologies to implement massive data collection and distributed storage calculation that provides real-time visibility into network operating status and enables refined operation and maintenance.
- Relying on big data technologies, SeerAnalyzer can trackback historical network running state, which is helpful for locating faults and implementing operation and maintenance tasks such as performance analytics and behavior audit.

## AI analytics

- Using distributed computing engines such as Spark and Flink as well as AI algorithms, SeerAnalyzer can provide data analytics online and offline, to meet intelligent O&M analytics requirements in any scenarios.
- SeerAnalyzer enables visibility into the entire network status by all-round collection and analytics of data including network device status data, protocol message data, traffic forwarding data, user access data, and log data. By virtue of machine learning (ML) algorithms and the expert system, SeerAnalyzer can detect network faults in real time, locate fault causes intelligently, and guide administrators to fix issues.
- SeerAnalyzer can evaluate the quality of networks, user experiences, and applications based on AI analytics of massive data, and enhance network optimization and assurance.
- High-performance data acquisition, real-time expert system, and AI algorithm calculation enable fault isolation environment verification, fault detection, impact verification, and isolation guidance.
- Through continuous AI analytics on historical network data, SeerAnalyzer can predict network faults and performance bottlenecks, and guide O&M personnel to intervene and plan in advance.

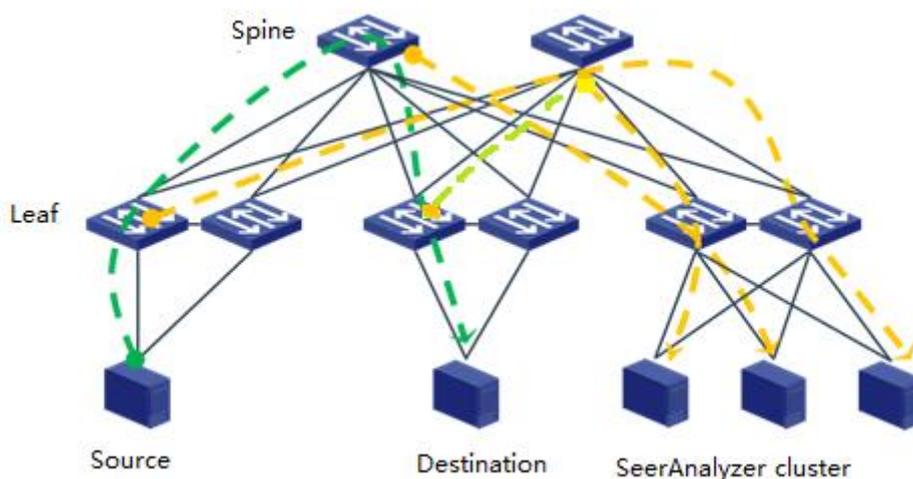
## Collaborative analytics of network and service data

SeerAnalyzer provides visibility into overall network health status through collaborative analysis of network device status data and network performance data.

- Provides full visibility into analytics on the operating status, faults, and risks of devices in the system plane, control plane, and data forwarding plane based on comprehensive, precise, and real-time metrics about the network devices.
- Collects TCP/IP traffic statistics to get insights into the network performance and find out the issues and risks existing in the network, network usage characteristics of applications, and abnormal access to network applications.
- SeerAnalyzer collects data about the processes of users accessing the network and analyzes a large amount of user data by groups for further analysis of network quality and issues.

## Application scenarios

### Data analytics | ERSPAN TCP session analytics



#### Mechanism

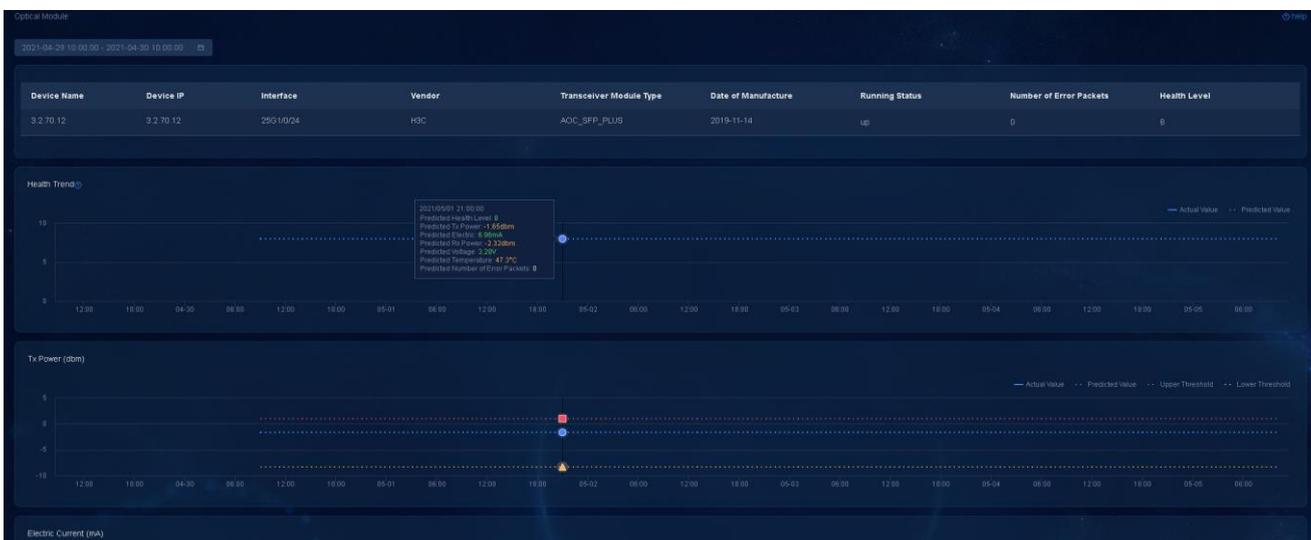
1. The client/server initiates a TCP connection establishment request and sends a TCP SYN message to the peer end.
2. The switches along the path capture the SYN message and encapsulate it as an ERSPAN message and send it to SeerAnalyzer.
3. SeerAnalyzer decapsulates the ERSPAN messages to get information about the message path and the forwarding delay of each switch along the way.
4. The switches along the path capture subsequent TCP control messages (SYN/FIN/RST messages) and send them to SeerAnalyzer. SeerAnalyzer reconstructs the TCP session interaction process and provides insights into the TCP connection quality according to the message information.

#### Benefits

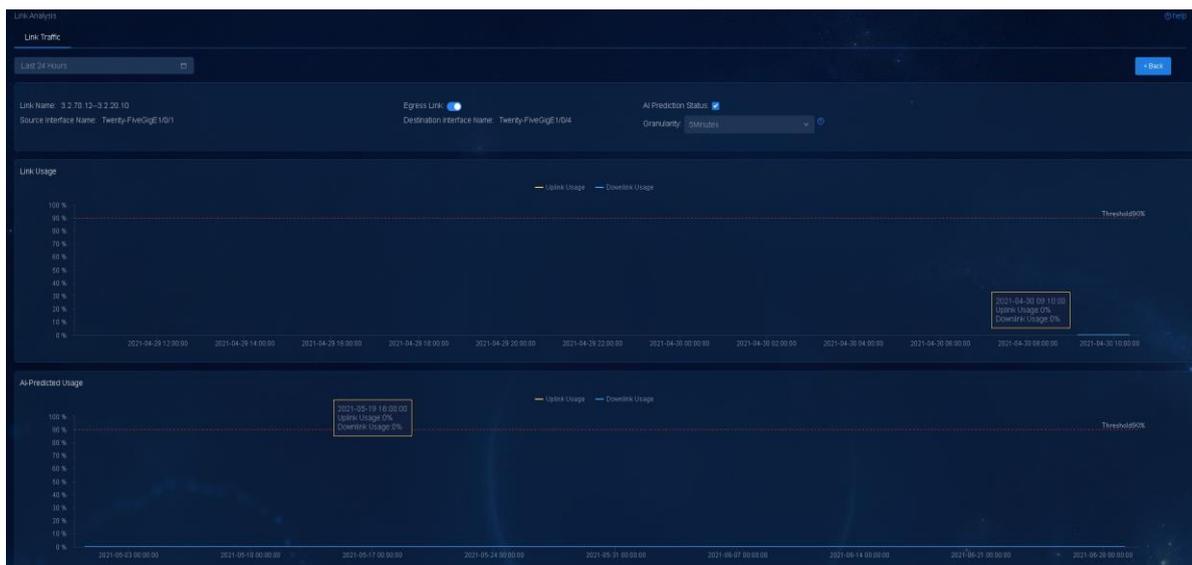
1. Obtain the traffic forwarding path through analysis of ERSPAN messages sent from switches along the path.

2. Obtain the time consumed for an application to establish the TCP connection and the forwarding time consumed by each switch along the path through analysis of the ERSPAN message timestamps, to easily identify whether the poor user experience is resulted from a slow network speed or an application-related issue.
3. Locate the cause of the poor user experience intelligently through collaborative analysis of real-time interface queue information and packet loss information obtained through Telemetry.
4. Assist in locating illegal network behaviors such as Synflood attacks.

## Intelligent prediction | Transceiver module fault and link quality prediction



Transceiver module fault prediction



Link traffic prediction

### Mechanism

1. Use distributed collectors to collect data about the interface bandwidth utilization and transceiver

module status of the devices across the network, and store them in the data warehouse after data cleaning and standardization.

2. Use ML algorithms to learn historical data about interface bandwidth utilization and transceiver module status continuously to predict traffic trends and potential transceiver module failures for a future period.

### Benefits

1. Predict future link traffic trends based on historical traffic data for early warning of network congestions and capacity planning.

2. Provide early warning for transceiver module failures and use human interventions to eliminate potential failures, improve service availability, and reduce network maintenance costs.

## Feature list

Feature		Description
Health assessment	Health overview	Overview of the whole network operation status. Actively monitor and evaluate the overall operation status and availability of network, equipment and applications.
	Network health	Collect network health information. Display the health trend, network health list and other information.
	Application health	Summarize the trend and distribution of application health across the network. Display the top applications of packet loss and delay.
	Device health	Statistics of operating state of network devices, table entry resources, port traffic, forwarding packet loss, etc.
Traffic analysis	TCP traffic analysis	Evaluate and display the session quality of TCP applications by analyzing connection establishment, forwarding time, etc.
	INT traffic analysis	By analyzing forwarding delay hop by hop to quickly find the congestion node within data center network.
Buffer monitoring and packet loss analysis	Buffer monitoring	Display the usage and packet loss statistics of ports and queue buffers of switches.
	Packet loss analysis	Display the packet loss statistics and reasons in the forwarding process of switches.
Network change analysis	Network change overview	Collect real-time operating configuration, ARP, MAC, routing table, etc., and display change statistics.
	Network change detail	Display the details of configuration and table change.
Fault analysis	Fault center	Display Network, Device, Protocol, Overlay four kinds of common faults. Find the fault and locate the root cause at minute level, and provide treatment suggestions.
	Event analysis	Display and analyze network and application events by 38 categories.

Predictive analysis	AI task	Identify the abnormal changes of various indexes of equipment and generate warning information automatically.
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## Ordering information

Item	Description
LIS-SeerAnalyzer-DC	H3C SeerAnalyzer Software Data Center Edition License
LIS-SeerAnalyzer-DC-Analyzer	H3C SeerAnalyzer Software Data Center Edition Analyzer License,1 Managed Node
LIS-SeerAnalyzer-DC-PSW-VAR	H3C SeerAnalyzer Software Data Center Edition License,1 Managed Switch
LIS-SeerAnalyzer-DC-PSWFA-VAR	H3C SeerAnalyzer Software Data Center Edition Flow Analytics License,1 Managed Switch
LIS-SeerAnalyzer-Collector-I	H3C SeerAnalyzer Software Collector Type I License



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