

# ANL Assessment and evidences of China Mobile Fujian on GB1059L\_RAN Network Quality Optimization

November 2025

# RAN Network Quality Optimization Questionnaire

| High-Value Scenario              | Cognitive Activity (IAADE) (IAADE) | Service Capability  | Weight   | Question  | Option A  | Option B  | Option C  | Option D  |
|----------------------------------|------------------------------------|---|--|---|---|---|---|---|
| RAN-network quality optimization | Intent                             | Intent Translation & Fulfilment evaluation                              | 10%  | How does the system translate the RAN network optimization intent into the RAN network optimization related control information and evaluate the RAN network optimization intent fulfilment? Note: RAN network optimization intent includes multiple targets for specified areas.<br><br>RAN network optimization control information includes RAN network optimization policies (e.g. adjusting base station parameters, load balancing) | The system can automatically generate the network optimization related control information based on human defined intents.<br>The system can automatically evaluate and generate the intent fulfilment report, including fulfilment status for targets.                             | The system can automatically generate the network optimization related control information based on predefined rules.<br><br>The system can automatically generate evaluation results. Human manually select the measurements for evaluation and confirm the evaluation result. | Manually define the RAN network optimization related control information based on expertise. Human manually evaluate the effect after the intention is implemented. |   |
|                                  | Awareness                          | RAN Network Information Collection                                      | 10%  | How does the system collect data?<br><br>Note: Data includes network performance data (e.g., performance measurement, MR data, MDT data), service experience data if needed, network configuration data, and environment data (e.g., electronic map, site location).  | The system can automatically collect and process data (e.g., data cleaning, missing data imputation)<br>Note: the network performance data needs to be collected in the granularity of cell and UE. The service experience data needs to be collected in the granularity of service | The system can automatically collect and process data (e.g., data cleaning, missing data imputation) based on manually defined rules.   | Manually select and use the system to collect and process data  | People use the system to collect data and manually filter out invalid/redundant data.     |
|                                  | Analysis                           | RAN Network Issue Identification & Performance Deterioration Prediction | 15%  | How does the system identify RAN network performance / service experience issues (e.g., coverage-related issues, RAN UE throughput-related issues) or predict network performance / service experience deterioration?   | The system can intelligently identify RAN network performance / service experience issues or predict network performance / service experience deterioration without human intervention.   | The system can automatically identify network issues or predict network performance. Manual confirmation is required.   | The system can identify network issues or predict network performance based on predefined rules.  | Manually identify RAN network problems or predict network performance based on expertise. |
|                                  |                                    | Issue Demarcation & Root Cause Analysis                                 | 20%  | How does the system perform problem demarcation and root cause diagnosis?   | The system intelligently demarcates issues and diagnoses root cause when the RAN network performance / service experience issue is identified or performance deterioration is predicted   | The system can automatically demarcate network performance / service experience issues and diagnose root cause, but requires human intervention to confirm the root causes.   | The system can demarcate network issues and diagnose root cause based on predefined rules.  | Locating problems and analyzing the root causes of network problems based on expertise.   |
|                                  |                                    | Adjustment Solutions Generating   | 20%  | How does the system generate the recommended network adjustment solutions (including a set of network adjusting actions) to solve the identified or predicted network performance / service experience issues?<br>Note: network adjustment solutions including but not limited to L2/L3 configuration parameters, RF parameters, 5QI related service configuration parameters.  | The system intelligently generates network optimization solutions (considering the coordination of multiple network adjusting actions), adjusted to adapt to RAN Traffic & Performance changes in real time.  | The system intelligently generates network optimization solutions (considering the coordination of multiple network adjusting actions), adjusted to adapt to RAN Traffic & Performance changes in non-real time.  | The system generates network optimization solutions based on predefined rules.  | Network optimization solutions are manually proposed based on expertise.                  |
|                                  | Decision                           | Solution Evaluation & Determination                                     | 15%  | How does the RAN network optimization system have the capability of automatically evaluating network optimization solutions and determining the best solution to implement?   | The system intelligently evaluates and determines the optimal network optimization solution when the recommended solutions are generated.   | The system automatically evaluates network optimization solutions, but requires human intervention to confirm the optimal solution.   | The system generates network optimization solutions based on predefined rules, but requires human intervention.   | network optimization solutions are evaluated and decided based on manual expertise.       |
| Execution                        | Solution implementation            | 10%   | How does the RAN network optimization system have the capability of executing the network adjustment solutions (e.g., adjusting and configuring the network parameters)?<br>Note: network parameters including but not limited to L2/L3 configuration parameters, RF parameters, 5QI related service configuration parameters. | The system implements network adjustment actions, without human intervention  | Humans use the system to execute manual instructions remotely.  | Solution implementation is entirely manual.   |   |   |

## China Mobile Self-Evaluation 7A

| Service Capability  | Weight | Capacity Answer | Capacity Score | Coverage Answer | Coverage Score | Interference Answer | Interference Score | Parameter and others Answer | Parameter and others Score |
|---|--------|-----------------|----------------|-----------------|----------------|---------------------|--------------------|-----------------------------|----------------------------|
| Intent Translation & Fulfilment evaluation                              | 10%    | A               | 4              | A               | 4              | A                   | 4                  | A                           | <b>4</b>                   |
| RAN Network Information Collection                                      | 10%    | A               | 3              | A               | 3              | A                   | 3                  | A                           | <b>3</b>                   |
| RAN Network Issue Identification & Performance Deterioration Prediction | 15%    | A               | 4              | B               | 3              | A                   | 4                  | A                           | <b>4</b>                   |
| Issue Demarcation & Root Cause Analysis                                 | 20%    | A               | 4              | A               | 4              | A                   | 4                  | A                           | <b>4</b>                   |
| Adjustment Solutions Generating   | 20%    | A               | 4              | A               | 4              | A                   | 4                  | A                           | <b>4</b>                   |
| Solution Evaluation & Determination                                     | 15%    | A               | 4              | A               | 4              | A                   | 4                  | A                           | <b>4</b>                   |
| Solution implementation   | 10%    | A               | 2              | A               | 2              | A                   | 2                  | A                           | <b>2</b>                   |
| Overall Score   |        |                 |                |                 |                |                     |                    |                             | <b>3.95</b>                |

## Question

How does the system translate the RAN network optimization intent into the RAN network optimization related control information and evaluate the RAN network optimization intent fulfilment? Note: RAN network optimization intent includes multiple targets for specified areas. RAN network optimization control information includes RAN network optimization policies (e.g. adjusting base station parameters, load balancing)

## Options

| Options | Option A  | Option B   | Option C   | Option D |
|---------|---|--|--|----------|
|         | <p>The system can automatically generate the network optimization related control information based on human defined intents.</p> <p>The system can automatically evaluate and generate the intent fulfilment report, including fulfillment status for targets.</p> | <p>The system can automatically generate the network optimization related control information based on predefined rules.</p> <p>The system can automatically generate evaluation results. Human manually select the measurements for evaluation and confirm the evaluation result.</p> | <p>Manually define the RAN network optimization related control information based on expertise. Human manually evaluate the effect after the intention is implemented.</p> |          |

## Example evidence for option A:

**Intelligent intent Identification and automatic evaluation:** Based on the wireless small U-optimized intelligent agent, the system automatically recognizes and translates network optimization intents, including coverage, interference, capacity, and other types, according to the input intent content. It generates control information such as network optimization strategies and can automatically evaluate and generate intent achievement reports, including optimization goals, optimization task lists, and effect evaluations.

### Coverage Intent Translation and Implementation Evaluation

**Intent Identification**

**Automatic generation of control information**

**Automatic evaluation and report generation**

### Interference Intent Translation and Implementation Evaluation

**Intent Identification**

**Automatic generation of control information**

**Automatic evaluation and report generation**

### Capacity Intent Translation and Implementation Evaluation

**Intent Identification**

**Automatic generation of control information**

**Automatic evaluation and report generation**

### Other Intent Translation and Implementation Evaluation

**Intent Identification**

**Automatic generation of control information**

**Automatic evaluation and report generation**

## Network Optimization Full-Online Workstation Supports Intent-Aware Automatic Recognition and Evaluation:

Through the network optimization full-online workstation, automated collection of performance, experience, configuration and other data is realized. Intelligent rules are deployed to focus on monitoring indicators such as coverage, interference, capacity and other categories. It invokes JiuTian AI Platform's capabilities for dynamic detection, automatically outputs problem lists, and achieves end-to-end full-automated closed-loop from problem discovery to resolution, including automatic root cause analysis, solution generation, execution instruction issuance and effect evaluation.

### Coverage Intent Translation and Implementation Evaluation

**100% end-to-end automated closed-loop for data collection, problem identification, root cause analysis, solution formulation, optimization execution, and effect evaluation.**

**Automatic Solution Decision-Making and Implementation:**  
The system automatically generates optimization solutions, selects the optimal one based on Turing's self-learning capability, and issues execution instructions.

**Automatic Effect Evaluation:**  
The system automatically assesses the effect and rolls back if the optimization operation is ineffective.

### Capacity Intent Translation and Implementation Evaluation

**100% end-to-end automated closed-loop for data collection, problem identification, root cause analysis, solution formulation, optimization execution, and effect evaluation.**

**Automatic Intent Recognition:**  
Based on intelligent rules, the system detects capacity problem cells and automatically identifies the root causes.

**Automatic Solution Decision-Making and Implementation:**  
The system automatically generates optimization solutions, selects the optimal one based on Turing's self-learning capability, and issues execution instructions.

**Automatic Effect Evaluation:**  
The system automatically assesses the effect and rolls back if the optimization operation is ineffective.

### Interference Intent Translation and Implementation Evaluation

**100% end-to-end automated closed-loop for data collection, problem identification, root cause analysis, solution formulation, optimization execution, and effect evaluation.**

**Automatic Intent Recognition:**  
Based on intelligent rules, the system detects interference problem cells and automatically identifies the root causes.

**Automatic Solution Decision-Making and Implementation:**  
The system automatically generates optimization solutions, selects the optimal one based on Turing's self-learning capability, and issues execution instructions.

**Automatic Effect Evaluation:**  
The system automatically assesses the effect and rolls back if the optimization operation is ineffective.

### Other Intent Translation and Implementation Evaluation

**100% end-to-end automated closed-loop for data collection, problem identification, root cause analysis, solution formulation, optimization execution, and effect evaluation.**

**Automatic Intent Recognition:**  
Based on intelligent rules, the system detects performance problem cells and automatically identifies the root causes.

**Automatic Solution Decision-Making and Implementation:**  
The system automatically generates optimization solutions, selects the optimal one based on Turing's self-learning capability, and issues execution instructions.

**Automatic Effect Evaluation:**  
The system automatically assesses the effect and rolls back if the optimization operation is ineffective.

## Question

How does the system collect data?

Note: Data includes network performance data (e.g., performance measurement, MR data, MDT data), service experience data if needed, network configuration data, and environment data (e.g., electronic map, site location).

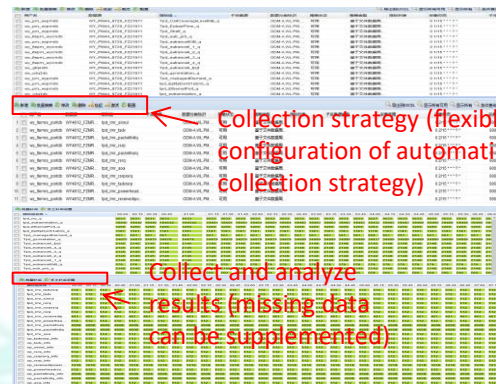
## Options

| Options | Option A  | Option B   | Option C  | Option D   |
|---------|---|--|---|--|
|         | <p>✓ <b>Option A</b></p> <p>The system can automatically collect and process data (e.g., data cleaning, missing data imputation)<br/>                     Note: the network performance data needs to be collected in the granularity of cell and UE. The service experience data needs to be collected in the granularity of service</p> | <p>The system can automatically collect and process data (e.g., data cleaning, missing data imputation) based on manually defined rules.</p> | <p>Manually select and use the system to collect and process data</p> | <p>People use the system to collect data and manually filter out invalid/redundant data.</p> |

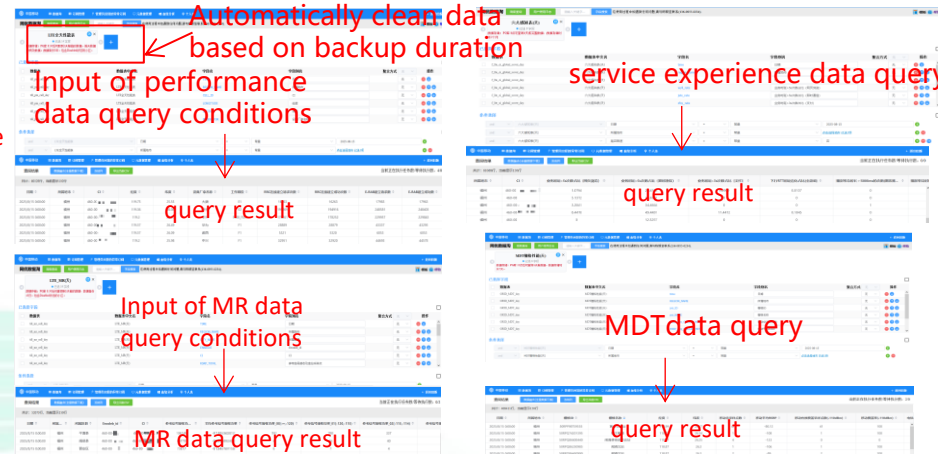
## Example evidence for option A:

**Automatic data collection and processing:** The system, based on the configured collection strategy, connects to the network optimization platform to automatically collect and parse wireless parameter configurations, performance data, MR data, MDT data, business experience data, etc. The front end allows flexible querying combined with GIS maps, visually presenting site locations and configuration information. It supports automatic cleanup of expired data, supplementary collection and import of lost data, and statistics at the cell, UE, and service granularities.

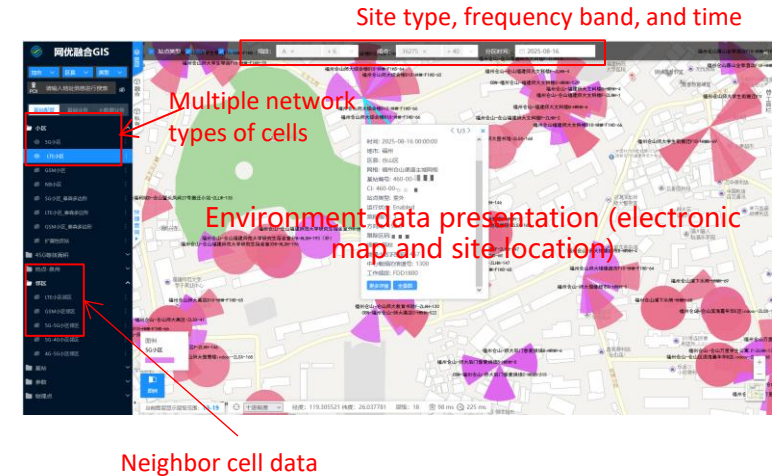
Northbound data collection and analysis



Data such as network performance, business experience, and network configuration can be flexibly queried



Network configuration data and environment data visualization



## Automatic Data Collection and Processing:

Automatic collection and data processing at granularities such as cells, UEs (User Equipments), service experience, and cell layer of electronic map. Meanwhile, the collected data is automatically monitored 24 hours a day, and missing data is automatically re-collected and stored in the database.

### ①The configuration settings for automatic data collection

PM/Network Configuration Data Automatic Collection Configuration

MR Data Automatic Collection Configuration

Automatic Collection Configuration Script for MDT Data

Automatic Collection Configuration Script for HTTP Services

Automatic Collection Configuration Script for Video Services

Automatic Collection Configuration Script for Voice Services

### ②Automatic monitoring of data collection

Automatically monitor data volumes of PM/MR/Service Experience/Network Configuration data

Automatically calculate the data integrity of PM/MR/Service Experience/Network Configuration

### ③Automatically re-collect missing data

Collect and parse results, missing data can be re-collected

### ④Electronic map display and data collection

Automatically calculate map-rendered data

Environmental Data Presentation (Electronic Maps, Site Locations, etc.)

Layers can be selected

Coverage Level and Other Data Presentation

Presented data can be selected

## Question

How does the system identifies RAN network performance / service experience issues (e.g., coverage-related issues, RAN UE throughput-related issues) or predict network performance /service experience deterioration?

## Options

|  | ✓ Option A   | Option B  | Option C   | Option D  |
|--|--|---|--|---|
|  | The system can intelligently identify RAN network performance / service experience issues or predict network performance /service experience without human intervention. | The system can automatically identify network issues or predict network performance. Manual confirmation is required. | The system can identify network issues or predict network performance based on predefined rules. | Manually identify RAN network problems or predict network performance based on expertise. |

## Example evidence for option A:

**Intelligent problem identification and prediction:** The online workbench for network optimization intelligently utilizes the atomic capability of the Jiutian platform for identifying wireless quality-poor cells. Based on current and historical data, it conducts automatic correlation analysis, dynamically identifies network performance/service experience quality issues, and predicts degradation trends. It intelligently outputs data such as network problem types, degradation indicators, and location information, supporting dimensions such as coverage, interference, capacity, and performance.

### Atomic capability: Poor radio quality cell identification capability

**Capability Description**

| 字段名称     | 值                       |
|----------|-------------------------|
| 4G公共覆盖数据 | 日期 (历史3个月数据) 2022-01-02 |
| 小区ID     | 488-48                  |
| 区域名称     | REGION_NAME             |
| 城市名称     | CITY_NAME               |
| 设备厂家名称   | PRODUCER                |
| 设备型号     | DEVICE_MODEL            |
| 覆盖类型     | COVER_TYPE              |
| 工作频段     | WORK_FREQBAND           |
| 基站编号     | cell_cover_id           |

**Invocation**

调用量: 3.45万

### The workbench of the entire network optimization line invokes atomic capabilities for problem

**Coverage Problem Identification and Prediction**

**Capacity Problem Identification and Prediction**

**Interference Problem Identification and Prediction**

**Performance Problem Identification and Prediction**



## Question

How does the system generate the recommended network adjustment solutions (including a set of network adjusting actions) to solve the identified or predicted network performance / service experience issues?

Note: network adjustment solutions including but not limited to L2/L3 configuration parameters, RF parameters, 5QI related service configuration parameters.

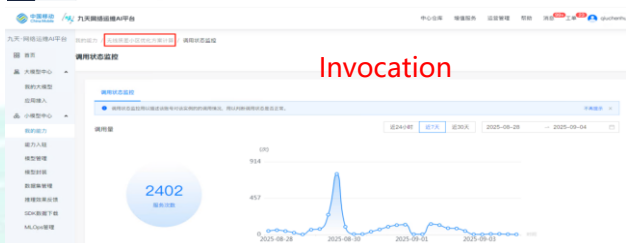
## Options

|  | ✓ Option A  | Option B  | Option C   | Option D   |
|--|---|---|--|--|
|  | The system intelligently generates network optimization solutions (considering of the coordination of multiple network adjusting actions), adjusted to adapt to RAN Traffic & Performance changes in real time. | The system intelligently generates network optimization solutions (considering of the coordination of multiple network adjusting actions), adjusted to adapt to RAN Traffic & Performance changes in non-real time. | The System generates network optimization solutions based on predefined rules. | Network optimization solutions are manually proposed based on expertise. |

## Example evidence for option A:

**Intelligent solution generation:** The network optimization platform intelligently invokes the atomic capabilities of the Jiutian platform's wireless poor quality cell optimization solution, intelligently and automatically associates data such as identified or predicted problematic cells MR, faults, PM, CM, neighboring areas, and adjustment operations, and intelligently generates multiple network optimization solutions. It can dynamically adjust network optimization solutions based on changes in wireless access network traffic and performance.

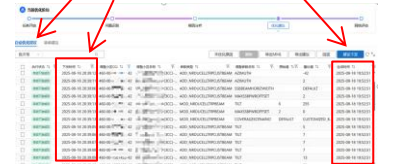
### Atomic capability: Calculation capability of the poor-quality cell optimization solution



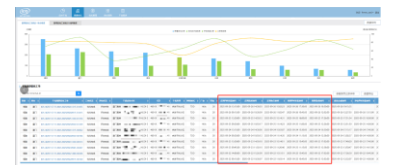
### The workbench of the entire network optimization line invokes the intelligent generation solution of atomic capabilities.

- Coverage problem**: Outputs a group of RF and power parameter solutions.
- Capacity problem**: Outputs a group of L2/L3 parameter solutions.
- Interference**: Outputs a group of L2/L3 parameter solutions.
- Performance problem**: Outputting the 5QI Service Parameter Solution.

Automatic real-time optimization in accordance with coverage and capacity changes.



Dynamic adjust the solution in accordance with the interference and roll back.



## Question

How does the RAN network optimization system have the capability of automatically evaluating network optimization solutions and determining the best solution to implement?

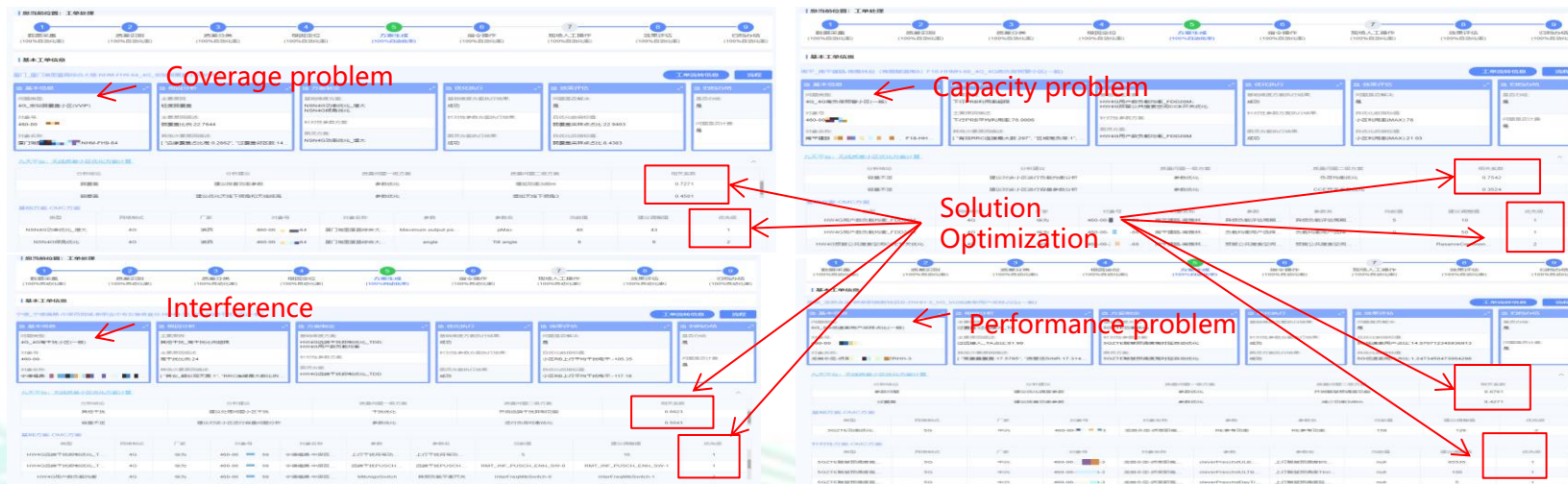
## Options

| Options | Option A  | Option B   | Option C   | Option D   |
|---------|---|--|--|--|
|         | <p>✓ <b>Option A</b></p> <p>The system intelligently evaluates and determines the optimal network optimization solution when the recommended solutions are generated.</p> | <p>The System automatically evaluates network optimization solutions, but requires human intervention to confirm the optimal solution.</p> | <p>The System generates network optimization solutions based on predefined rules, but requires human intervention.</p> | <p>network optimization solutions are evaluated and decided based on manual expertise.</p> |

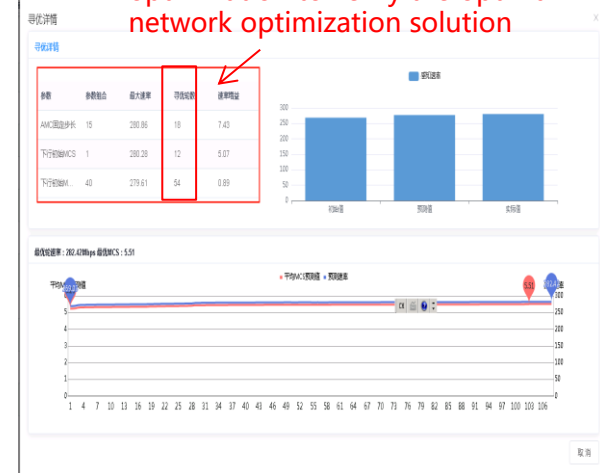
## Example evidence for option A:

**Optimal solution selection:** The online workbench for network optimization intelligently utilizes Turing's self-learning capability to generate solutions, automatically conducts intelligent evaluation on multiple generated network optimization solutions, and determines the optimal network optimization solution, ensuring the effectiveness of the optimization solution, reducing the risk of optimization adjustments, and improving optimization efficiency.

## Evaluate the relevance of the solution to determine the best solution



Combine parameters and perform multiple rounds of iterative optimization to verify the optimal network optimization solution



## Question

How does the RAN network optimization system have the capability of executing the network adjustment solutions (e.g., adjusting and configuring the network parameters)?

Note: network parameters including but not limited to L2/L3 configuration parameters, RF parameters, 5QI related service configuration parameters.

## Options

| Options  | Option A          | Option B   | Option C                                    | Option D |
|--|-------------------|--|---|----------|
| The System implements network adjustment actions, without human intervention | ✓ <b>Option A</b> | Humans use the system to execute manual instructions remotely. | Solution implementation is entirely manual. |          |

## Example evidence for option A:

**Solution implementation:** The online workbench for network optimization intelligently utilizes the centralized parameter platform and OMC network management to achieve automated execution of parameters, automatic review, automatic configuration, automatic modification, automatic evaluation, and automatic fallback. This improves the timeliness of cell optimization while ensuring the accuracy of parameter modifications in the existing network.

### L2/L3 configuration parameters, RF parameters, and 5QI-related service configuration parameters are automatically

The screenshots illustrate the automated workflow for network optimization. Key elements include:

- Coverage problem:** Identification of coverage issues in the initial state.
- Automatic Execution Succeeded:** Confirmation that the system has successfully executed the optimization parameters.
- Interference:** Identification of interference issues.
- Automatic Execution Succeeded:** Confirmation of successful execution for interference-related parameters.
- Automatic Review:** The system automatically reviews the configuration changes.
- L2/L3 Automatic Parameter Review Execution:** Automated review and execution of L2/L3 parameters.
- Capacity problem:** Identification of capacity-related issues.
- Automatic Execution Succeeded:** Confirmation of successful execution for capacity-related parameters.
- Performance problem:** Identification of performance issues.
- Automatic Execution Succeeded:** Confirmation of successful execution for performance-related parameters.
- Automatic Review of 5QI Service Parameters:** Automated review and execution of 5QI service parameters.

### Automatic Rollback for Invalid Optimization

This screenshot shows a table of optimization results. A red box highlights a row where the optimization failed, with the annotation "Automatic rollback due to invalid optimization".

This screenshot shows a chart and a table of optimization results. A red box highlights a row where the optimization failed, with the annotation "Automatic rollback due to invalid optimization".

**Thanks**