

GB1059D IP Network Fault Management Questionnaire Evidence

China Telecom Group Jiangsu Co., Ltd.
2025.11



Fault management target formulation

Service capability	Weight	Question	√Option A	Option B	Option C	Option D
Fault management target formulation	10%	Does the system support automatic generation of fault management targets? Note: 1) Intent could be fault management requirements such as MTTR (mean time to repair) , troubleshooting priority (e.g., emergency restoration in highest priority) , customized troubleshooting preference based on fault impact scope and severity, etc. 2) Fault management target include alarm severity, alarm threshold, alarm aggregation rules, fault notification rules, etc.	The system supports the input of fault management intent by simplified human-system interaction (e.g., nature language user interface provided by system), system automatically translates the intent into fault management targets .	The system supports manual configuration of fault management targets with custom rule-based templates. Manually adjustment and confirmation is needed.	The system generates fault management targets based on predefined template. Manually confirmation is needed.	Manually set fault management targets based on expertise(such as setting alarm severity and classification) .

Example evidence for option A:

1. By inputting fault management intentions through natural language, the system automatically initiates the fault diagnosis process, performs key indicator queries, and conducts AI multi-dimensional analysis.

2. The system automatically generates and executes the corresponding fault diagnosis process based on the intention.

3. When the system identifies a fault, it will automatically generate a fault ticket, execute the fault diagnosis process, perform fault classification and localization, generate a repair plan, and automatically verify it, achieving automatic fault handling.

Input intention of fault management

Execute the fault diagnosis process

Conduct AI multi-dimensional analysis

正在处理, 请耐心等待
QuickQuery智能体收到请求, 请等待处理!
QuickQuery意图识别【成功】: 用户意图: 扬州新城指标监测
智能体建议包含关键信息: 意图1: 扬州; 意图2: LTP设备IP, 默认不查询单个LTP指标, 请等待智能体执行
QuickQuery意图识别【正常】: 地点【扬州】; LTP设备IP【不查询单个LTP指标】
智能体开始扬州新城指标监测
QuickQuery智能体正在查询扬州新城业务指标

QuickQuery智能体正在查询扬州新城业务指标

扬州整体AAA曲线图如下

扬州UP池

扬州UP池

扬州UP池

QuickQuery分析扬州3小时内全量监测

QuickQuery分析扬州存在探测异常

QuickQuery

多维数据AI分析
扬州新城检查结果如下:
1、AAA用户数曲线均正常
2、扬州3小时内全量探测存在偶发丢包情况, 未出现丢包100%情况
3、IPv6优良率和故障码曲线正常
4、宽带、ITV无万号申告
处理建议: 当前指标正常, 建议关注偶发丢包情况

The system supports fault management and provides diagnosis for various types of faults, including hardware faults, device offline, optical module faults or abnormal optical power, port faults, bit errors, VPN performance degradation, and VPN interruptions.

QuickQuery 机器人

该账号在交换机下 账号对应DC IP: 5. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

The system automatically generates a Fault Ticket.

IP-机器人

16	VSU	Present	Registered	Normal
17	MPU	Present	Registered	Normal
18	MPU	Present	NA	Normal
19	SFU	Present	Registered	Normal
20	SFU	Present	Registered	Normal
21	SFU	Present	Registered	Normal
22	SFU	Present	Registered	Normal
23	CLK	Present	Registered	Normal
24	CLK	Present	Registered	Normal
25	PWR	Present	Registered	Normal
26	PWR	Present	Registered	Normal
27	FAN	Present	Registered	Normal
28	FAN	Present	Registered	Normal
29	FAN	Present	Registered	Normal
30	FAN	Present	Registered	Normal

检查当前告警: <JS-NJ-YFKJ-BAS-1.MAN.NE40E-X16>
</Dxfrdc2008/IwBoardFail/Critical/End/ Oid 1.3.6.1.4.1.2011.5.25.219.2.2.3 The board partially failed. (EntityPhysicalIndex=16908546, EntityPhysicalIndex=16908546, EntityPhysicalName="PIC 2/0", EntityType=4, EntryTrapFaultID=132141, EntryTrapReasonDescr="", EntityOperStatus=16)>

多维数据AI分析
<ONU性能分析结果: ONU状态是online, OLT上配置了专线业务流, 且能学到专线MAC地址, OLT配置外层vlan为345, OLT配置内层vlan为空.>
<BAS子接口性能分析结果: 专线正常, 有ARP在线.>

处理建议
专线正常, 无需排查。

AI数据多维分析: 设备状态显示: 槽位2 (LPJ) 的状态为 UNPOWERED (未上电) 和 UNRegistered (未注册); 状态为 Abnormal (异常), 其他槽位的板卡状态正常 (Present, Registered, Normal); 告警信息有 "PIC 2/0" (即槽位2的0号子卡); 板卡: JS-NJ-YFKJ-BAS-1.MAN.NE40E-X16 (5.8.213.239.178) 设备板卡故障告警生成成功, 并向网管系统进行汇报, 单号 2026090001812.

Data Collection

Service capability	Weight	Question	Option A	Option B	Option C	Option D
Data Collection	10%	Does the system support automatic collection of fault-related indicators, including alarms, logs, performance, and OAM data etc? Note: 1) fault should include but not limit to device offline, physical port down, optical module failure, etc. 2) All types of faults mentioned in 1) and fault-related indicators mentioned in options should be covered when choosing a related option	The system automatically collects fault-related indicators including alarms, logs, performance, and OAM data, detecting service and network status in minutes.	The system automatically collects fault-related indicators including alarms, logs, performance, detecting service and network status within 15 minutes or 24 hours.	The system automatically collects alarms and logs.	

Example evidence for option A:

Real-time Fault & Performance Alarm Management

The screenshot shows a web-based interface for managing network alarms. It includes search filters for device name, location, and event type. Below the filters is a table of active alarms:

设备ID	设备名称	告警对象	告警类型	报警内容	告警时间	告警状态	是否消单	告警
JS-NT-...	MAN MEG6	GigabitEthernet e7/1/4	物理端口Down	告警原因: 物理端口Down... (NT96050811000091100E112020)...	2025-08-29 06:47:34	产生		
JS-NT-...	MAN MEG6	GigabitEthernet e7/1/4	物理端口Down	告警原因: 物理端口Down... (NT96050811000091100E112020)...	2025-08-29 06:45:24	产生		
JS-NT-...	MAN MEG6	GigabitEthernet e7/1/4	物理端口Down	告警原因: 物理端口Down... (NT96050811000091100E112020)...	2025-08-29 06:45:23	产生		

Baichuan system log management

The screenshot shows the Baichuan system log management interface. It features a sidebar with navigation options like '数据地图', '原子能力配置', and '原子能力调用'. The main area displays a table of interface logs:

equipment_ip	equipment_name	equipment_type	alarm_content	alarm_time	specialty	create_time
56.104.19.54	JS-NJ-...	BAS	Nov 21 04:20:00.5...	2025.11.21 04:20:00	IPM	2025.11.21 05:26:26
56.104.19.54	JS-NJ-...	BAS	Nov 21 04:20:00.5...	2025.11.21 04:20:00	IPM	2025.11.21 04:25:55
56.104.19.54	JS-NJ-...	BAS	Nov 21 04:19:54.5...	2025.11.21 04:19:54	IPM	2025.11.21 04:25:31

Minute-level Performance



Minute-level VPN OAM data analysis

The screenshot shows a minute-level VPN OAM data analysis dashboard. It includes a table of VPN tunnel statistics and a summary of the analysis results.

序号	设备ID	设备名称	设备类型	设备状态	设备IP	设备名称	设备类型	设备状态	设备IP	设备名称	设备类型	设备状态	设备IP	设备名称	设备类型	设备状态
1	GLP0001	201600824	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常
2	igp0001	201600824	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常
3	igp0001	201600824	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常
4	igp0001	201600824	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常
5	igp0001	201600824	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常	11.20.16.003	温州南桥	oe	正常

Risk identification

Service capability	Weight	Question	Option A	Option B	Option C	Option D
Risk identification	10%	Does the system support automatic identification of risks? Note: 1) existing risks can be reported in alarm/event, including but not limited to network element and link anomalies, . For example, board temperature, optical module with weak optical power, etc. 2) potential risks can't be reported directly in alarm/event, including but not limited to network element resource and capacity anomalies, network configuration anomalies, and routing anomalies. For example, abnormal memory usage of device, incorrect static route configuration and incorrect BGP configuration, abnormal BGP route number, etc.	The system supports automatic identification of existing risks and prediction of potential risks.	The system supports automatic identification of existing risks.	The system identifies risks based on manually pre-defined rules.	Manually identify risks based on expertise.

Example evidence for option A:

The system is based on performance collection and supports the prediction of potential risks, such as CPU, memory, optical power, traffic, CRC, VPN performance, VPN online user count, and device log count prediction.

The system supports AI analysis of exception logs.



The system supports AI-based intelligent audit, automatically detecting issues such as missing or redundant protocol configurations.



Fault identification & Impact analysis-1

Service capability	Weight	Question	Option A	Option B	Option C	Option D
Fault identification and impact analysis	10%	Does the system support automatic and intelligent identification of faults? Note: 1) fault should include but not limit to device offline, physical port down, optical module failure, etc. 2) Custom rules include but not limited to scenario specific rules made based on data analysis on alarms, logs, performance and OAM data, etc.	The system supports automatic fault identification by intelligent aggregating of multiple data source (alarms, logs, performance data, OAM data, etc.). System provides the impacted services with severity.	The system support automatic fault identification based on custom rules, results need manually confirmation.	The system supports automatic fault identification based on predefined rules, results need manually confirmation.	Manually identify faults based on expertise.

Example evidence for option A:

The system automatically conducts data collection and business impact analysis.

Sub-scenario-1: Hardware Failure

【拓朴式运维智能体--板卡子流程】
工单编号: [20250909001812]
【设备实时告警压缩总结】 Real-time Alarm Compression
【设备端口实时状态查询】 Real-time Device Port Status Query

Sub-scenario-2: Device Offline

After receiving a fault ticket, the system will automatically analyze the affected services

【智能分析】四叶草云网事件处置机器人: 【业务影响】成对B设备 JS-XZ-SN-... ping测试正常, 查看当前B设备下联A环10个, 涉及114个A设备, 当前均无脱网, 下挂BBU408个, 均未出现退服问题, 因此判断该告警不影响业务。

Sub-scenario-4: Port Failure

【拓朴式运维智能体--端口子流程】
工单编号: [20250829000288]
【设备实时告警压缩总结】
【设备端口实时状态查询】

Sub-scenario-3: Optical Module Failure or Optical Power Abnormal

【拓朴式运维智能体--告警子流程】
工单编号: [20250912000000]
【设备实时告警压缩总结】
【设备端口实时状态查询】

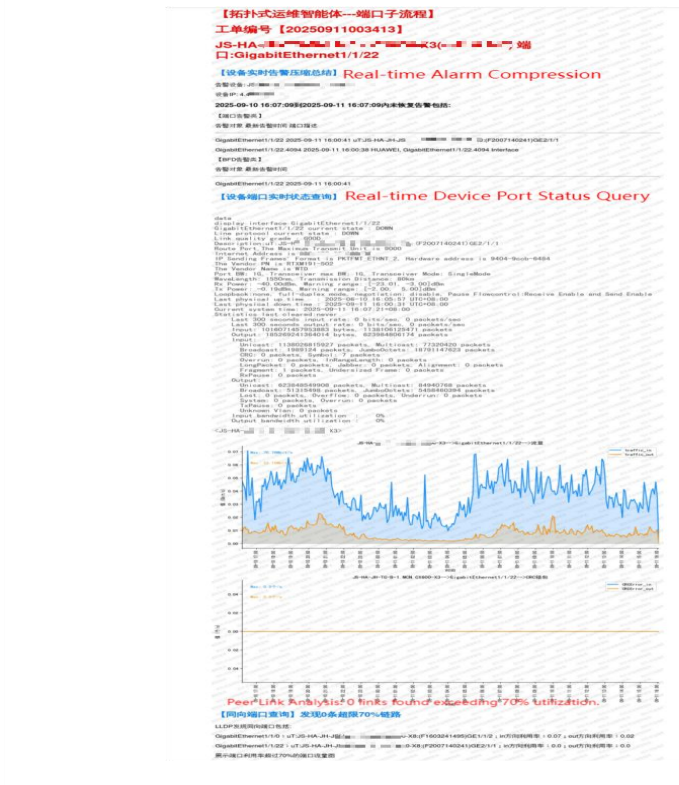
工单	标题	内容	时间	状态	备注
2	工单	【拓朴式运维智能体--告警子流程】 工单编号: [10004003000]	2025-11-17 17:49:31	处理中	【拓朴式运维智能体--告警子流程】 工单编号: [10004003000]
3	告警	【拓朴式运维智能体--告警子流程】 工单编号: [10004003000]	2025-11-17 17:49:30	待处理	【拓朴式运维智能体--告警子流程】 工单编号: [10004003000]

Fault identification & Impact analysis-2

Service capability	Weight	Question	Option A	Option B	Option C	Option D
Fault identification and impact analysis	10%	Does the system support automatic and intelligent identification of faults? Note: 1) fault should include but not limit to device offline, physical port down, optical module failure, etc. 2) Custom rules include but not limited to scenario specific rules made based on data analysis on alarms, logs, performance and OAM data, etc.	The system supports automatic fault identification by intelligent aggregating of multiple data source (alarms, logs, performance data, OAM data, etc.). System provides the impacted services with severity.	The system support automatic fault identification based on custom rules, results need manually confirmation.	The system supports automatic fault identification based on predefined rules, results need manually confirmation.	Manually identify faults based on expertise.

Example evidence for option A:

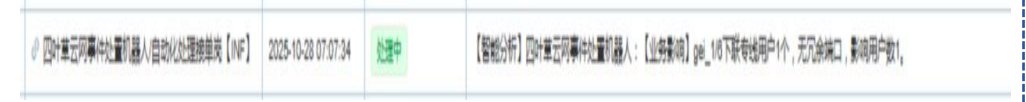
Sub-scenario-5: High Error Rate **Sub-scenario-6: Protocol State Abnormal**
The system automatically identifies faults by intelligently aggregating multiple data sources (alerts, logs, performance data, OAM data, etc.).



Sub-scenario-7: VPN Degradation
The system monitored a sudden decrease in the number of VPN users, automatically conducted data collection and business impact analysis, and concluded that there was no impact on the business.



Sub-scenario-8: VPN Interruption

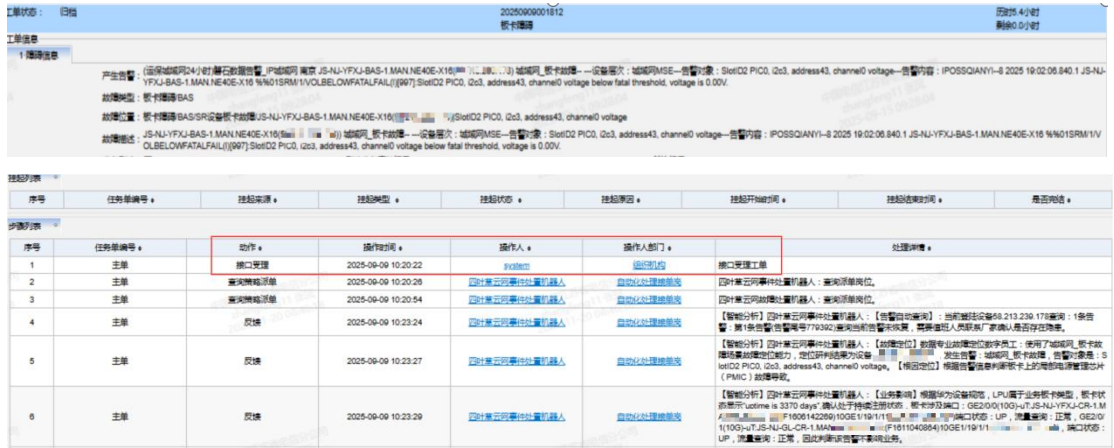


Demarcation of faults and risks

Service capability	Weight	Question	√Option A	Option B	Option C	Option D
Demarcation of faults and risks	20%	Does the system support automatic demarcation of faults and risks? Note: 1) Examples of demarcation involve pinpointing the exact roles of malfunctioning routers, like identifying whether they are access routers, aggregation routers, or Autonomous System Boundary Router (ASBR). 2) Custom rules include but not limited to scenario specific rules made based on data analysis on alarms, logs, performance and OAM data, etc.	The system automatically demarcates the faults and risks without manual intervention.	The system demarcates the faults and risks based on <u>custom</u> rules, results need manually confirmation.	The system demarcates the faults and risks based on predefined rules, results need manually confirmation.	Manually demarcates the fault and risks based on data such as operation logs and captured packets.

Example evidence for option A:

The system automatically demarcates the faults and risks without manual intervention. After collecting raw alarms, the system automatically completes alarm filtering/parsing/flipping preprocessing, accurately generates board fault tickets, and the fault information includes fault level, fault type, equipment identification, equipment hierarchy, fault status, and other information. This process does not require manual intervention.



Generation and evaluation of solutions-1

Service capability	Weight	Question	√Option A	Option B	Option C	Option D
Generation and evaluation of solutions	15%	Does the system support automatic generation and evaluation of emergency restoration and repair solution? Note: 1) Emergency restoration solution may be compute alternative paths based on service SLA requirement. 2) Repair solution may be repair power supply.	The system automatically generates emergency restoration and repair solutions. The system automatically make decision on the alternative solutions based on evaluation through simulation.	The system automatically generates emergency restoration and repair solutions. Manually make decision on the alternative solutions.	The system gives emergency restoration suggestions. Manually formulate solutions and make decision.	Manually analyze and evaluate emergency restoration solutions based on system-collected service data.

Example evidence for option A:

After receiving the fault ticket, the system automatically generates multiple solutions and intelligently selects one optimal solution based on the fault management scenario, synchronously outputs the selection criteria, and achieves automation and intelligence of fault decision-making without manual intervention throughout the process.

Sub-scenario-1: Hardware Failure

<p>Repair solution: Replace the faulty card</p> <p>四叶草云网事件处置机器 △</p> <p>自动化处理接单岗</p>	<p>【智能分析】四叶草云网事件处置机器人：【解决方案】方案1.检查板卡物理连接并重新插拔 操作步骤：关闭板卡电源（支持热插拔的情况下直接拔出），清洁板卡金手指和槽位接口（用专用清洁剂或干燥软布），重新插入并确保卡扣扣紧，观察告警是否消失。方案2.更换 SlotID2 PIC0 板卡 操作步骤：准备同型号备用 PIC 板卡，按热插拔流程（或断电后）更换故障板卡，重启后通过 display device 确认板卡状态，观察告警是否清除。AI 最优方案选择：更换 Slot ID2 PIC0 板卡 核心原因：告警显示电压为 0.00V（完全断电），属于致命硬件故障，90% 以上概率是板卡自身供电电路损坏（物理损坏概率远高于连接或电源模块问题）。</p>
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Sub-scenario-2: Device Offline

<p>Repair solution: Replace the faulty MPU</p> <p>四叶草云网事件处置机器 △</p> <p>自动化处理接单岗</p>	<p>【智能分析】四叶草云网事件处置机器人：【解决方案】方案1.检查板卡物理连接并重新插拔 操作步骤：关闭板卡电源（支持热插拔的情况下直接拔出），清洁板卡金手指和槽位接口（用专用清洁剂或干燥软布），重新插入并确保卡扣扣紧，观察告警是否消失。方案2.更换9槽主控板卡CX6DOSRUAH11 操作步骤：准备同型号备用主控板卡，按热插拔流程（或断电后）更换故障板卡，重启后通过 display device 确认板卡状态，观察告警是否清除。AI 最优方案选择：更换9槽主控板卡CX6DOSRUAH11 核心原因：主控板硬件损坏（如芯片故障、电容鼓包），必须通过更换解决根本问题。</p>
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Sub-scenario-3: Optical Module Failure or Optical Power Abnormal

<p>Repair solution: Replace the faulty optical module</p> <p>AI 机器人自动处理故障单【WEB端】 △</p> <p>2025-11-17 17:48:18</p> <p>处理中</p>	<p>【智能分析】四叶草云网事件处置机器人：【解决方案】</p> <p>1.现场更换故障光模块（直接解决光模块故障）</p> <p>佩戴防静电手环，避免直接触碰光模块金手指和光口端面；</p> <p>拆卸故障模块：握住光模块两侧卡扣，轻轻向外拔出，放置在防静电垫上，避免光口沾染灰尘（可贴防尘帽保护），安装备用模块：取出备用光模块（光模块型号F820），擦去光口防尘帽，对准端口插紧并推入，听到“咔嗒”声确认卡扣咬紧，确保模块无松动、倾斜。</p> <p>2.临时启用备用端口与光模块</p> <p>利用设备空闲端口Epon_0lt-1/5/14作为备用端口，现场将Epon_0lt-1/5/13端口的光纤插入Epon_0lt-1/5/14端口。</p> <p>AI最优方案选择：现场更换故障光模块</p> <p>核心原因：直接解决光模块故障</p>
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Sub-scenario-4: Port Failure

<p>Repair solution: Troubleshooting and repairing optical fibers</p> <p>四叶草云网事件处置机器 △</p> <p>自动化处理接单岗</p>	<p>【智能分析】四叶草云网事件处置机器人：【解决方案】方案1.现场排查修复光纤链路（直接解决光纤中断问题）通过 OTDR（光时域反射仪）连接 NT96 00SXB1/10G0091 光纤的两端，测试光纤断点位置、损耗值，明确中断原因（如光纤断裂、接头松动、衰减超标）。携带光纤熔接机、备用光纤段、切割刀等工具，截断故障光纤段，剥除光纤涂覆层（露出纤芯），通过熔接机进行熔接（确保熔接损耗≤0.1dB），熔接完成后用热缩管保护熔接点，重新布放光纤并连接两端设备。方案2.新开备用链路 利用设备空闲端口如 GigabitEthernet t7/1/5 作为备用端口，新开备用链路。AI 最优方案选择：现场排查修复光纤链路 核心原因：直接解决光纤中断问题。</p>
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Generation and evaluation of solutions-2

Service capability	Weight	Question	Option A	Option B	Option C	Option D
Generation and evaluation of solutions	15%	Does the system support automatic generation and evaluation of emergency restoration and repair solution? Note: 1) Emergency restoration solution may be compute alternative paths based on service SLA requirement. 2) Repair solution may be repair power supply.	The system automatically generates emergency restoration and repair solutions. The system automatically make decision on the alternative solutions based on evaluation through simulation.	The system automatically generates emergency restoration and repair solutions. Manually make decision on the alternative solutions.	The system gives emergency restoration suggestions. Manually formulate solutions and make decision.	Manually analyze and evaluate emergency restoration solutions based on system-collected service data.

Example evidence for option A:

After receiving the fault ticket, the system automatically generates multiple solutions and intelligently selects one optimal solution based on the fault management scenario, synchronously outputs the selection criteria, and achieves automation and intelligence of fault decision-making without manual intervention throughout the process.

Sub-scenario-5: High Error Rate

Repair solution:
Troubleshooting and repairing optical fibers

[四叶草云网事件处置机器人](#) [自动化处理接单岗](#)

【智能分析】四叶草云网事件处置机器人：【解决方案】方案1.现场排查修复光纤链路（直接解决光纤中断问题）通过 OTDR（光时域反射仪）连接WX/10 GE05171P光纤的两端，测试光纤断点位置、衰耗值，明确中断原因（如光纤断裂、接头松动、衰耗超标）。携带光纤熔接机、备用光纤段、切割刀等工具，截断故障光纤段，剥除光纤涂覆层（露出纤芯），通过熔接机进行熔接（确保熔接损耗≤0.1dB），熔接完成后用热缩管保护熔接点，重新布放光纤并连接两端设备。方案2.新开备用链路 利用设备空闲端口如 GigabitEthernet2/3/0/9 作为备用端口，新开备链路。AI最优方案选择：现场排查修复光纤链路 核心原因：直接解决光纤中断问题。

Sub-scenario-6: Protocol State Abnormal

Repair solution:
Replace the faulty optical module

[四叶草云网事件处置机器人](#) [自动化处理接单岗](#)

【智能分析】四叶草云网事件处置机器人：【解决方案】1.现场更换故障光模块（直接解决光模块故障）佩戴防静电手环，避免直接接触光模块金手指和光口端面；拆卸故障模块：捏住光模块两侧卡扣，轻轻向外拔出，放置在防静电垫上，避免光口沾染灰尘（可贴防尘帽保护）。安装备用模块：取出备用光模块（单模，波长1550nm,80km，光模块型号RTXM191-502），撕去光口防尘帽，对准端口插槽平稳推入，听到“咔嚓”声确认卡扣扣紧，确保模块无松动、倾斜。2.临时启用备用端口与光模块 利用设备空闲端口如 GigabitEthernet2/1/2作为备用端口，现场将2/1/1端口的光纤插入2/1/2端口。AI最优方案选择：现场更换故障光模块 核心原因：直接解决光模块故障

Sub-scenario-7: VPN Degradation

四叶草云网事件处置机器人/自动化处理接单岗【INF】	2025-11-04 21:10:33	处理中	<p>【智能分析】四叶草云网事件处置机器人：【解决方案】</p> <p>【解决方案】</p> <p>方案1 检查板卡物理连接并重新插拔</p> <p>操作步骤：关闭板卡电源（支持热插拔的情况下直接拔出），清洁板卡金手指和槽位接口（用专用清洁剂或干燥软布），重新插入并确保卡扣扣紧，观察告警是否消失。</p> <p>方案2 更换Slot=2业务板卡CSPEX-1812X-E</p> <p>操作步骤：准备同型号业务板卡，按热插拔流程（或断电后）更换故障板卡，重启后通过display device确认板卡状态，观察告警是否清除。</p> <p>AI最优方案选择：更换Slot=2业务板卡CSPEX-1812X-E</p> <p>核心原因：直接更换故障板卡，从根本上消除 NP 芯片死锁问题，避免故障反复引发业务频繁中断</p>	<p>Repair solution: Replace the faulty card</p>
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Sub-scenario-8: VPN Interruption

四叶草云网事件处置机器人/自动化处理接单岗【INF】	2025-10-28 07:07:29	处理中	<p>【故障定位】数据专业故障定位岗员工：使用了移动网络_端口Down场景故障定位能力，定位研判结果为设备：... 发生告警：移动网络_端口Down，告警对象是：ge_1/0【原因定位】判断ge_1/0端口光纤中断导致。</p> <p>【智能分析】四叶草云网事件处置机器人：【解决方案】</p> <p>方案1 现场排查修复光纤链路（直接解决光纤中断问题）</p> <p>通过 OTDR（光时域反射仪）连接ge_1/0端口光纤的两端，测试光纤断点位置、衰耗值，明确中断原因（如光纤断裂、接头松动、衰耗超标），携带光纤熔接机、备用光纤段、切割刀等工具，截断故障光纤段，剥除光纤涂覆层（露出纤芯），通过熔接机进行熔接（确保熔接损耗≤0.1dB），熔接完成后用热缩管保护熔接点，重新布放光纤并连接两端设备。</p> <p>方案2 新开备用链路</p> <p>利用设备空闲端口如 ge_1/1/0作为备用端口，新开备链路。</p> <p>AI最优方案选择：现场排查修复光纤链路</p> <p>核心原因：直接解决光纤中断问题。</p>	<p>Repair solution: Troubleshooting and repairing optical fibers</p>
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Execution and verification-1

Service capability	Weight	Question	√Option A	Option B	Option C	Option D
Execution and verification	10%	Does the system support automatic execution and verification? Does the system support assistance for on-site engineers?	1) The system supports automatic execution and verification of emergency restoration and repair solution. (Automatic repair excludes the faults that on-site handling is necessary, such as power supply failure, board fault, fiber cut). 2) The system support intelligent on-site instruction and efficient information query based on simplified human-system interaction.	1)The system supports automatic execution of emergency restoration and repair solution. Manual verification is needed. 2)The on-site handling are assisted by tool.	The system support automatic execution of emergency restoration. Manually execute repair solution. Manually verify by analyzing system data (e.g., alarms)	

Example evidence for option A:

For faults that the system can automatically repair, the system will automatically execute emergency plans to quickly restore business.

For faults that require manual on-site handling, the system supports intelligent on-site guidance and efficient information retrieval. Input natural language and the system automatically recognizes user intent. Automatically log in to the device for status checks, improving the efficiency of on-site maintenance personnel.

Sub-scenario-1:Hardware Failure

The system supports intelligent on-site guidance and efficient information retrieval based on simplified human-computer interaction.

正在处理, 请稍候

QuickQuery智能体收到请求
请等待处理!

QuickQuery意图识别【成功】: 用户意图: IP查询
智能体建议包含关键信息: Intent recognition: Successful
信息1: 设备IP
信息2: 端口/命令/板卡
请等待智能体执行

QuickQuery意图识别【正常】
设备IP: [redacted]
端口/命令:
类型/板卡
智能体开始IP查询

12:55

display device NE40E-X16's Device status: Slot #

Type	Online	Register	Status	Primary
1	LPU	Present	Registered	Normal
NA 2	LPU	Present	Registered	Normal
NA 3	LPU	Present	Registered	Normal
NA 7	VSU	Present	Registered	Normal
NA 15	VSU	Present	Registered	Normal
NA 16	VSU	Present	Registered	Normal
NA 17	MPU	Present	Registered	Slave 18
MPU	Present	NA	Normal	Master
19	SFU	Present	Registered	Normal
NA 20	SFU	Present	Registered	Normal
NA 21	SFU	Present	Registered	Normal
NA 22	SFU	Present	Registered	Normal
NA 23	CLK	Present	Registered	Normal
Slave 24	CLK	Present	Registered	Normal
Master 25	PWR	Present	Registered	Normal
NA 26	PWR	Present	Registered	Normal
NA 27	FAN	Present	Registered	Normal
NA 28	FAN	Present	Registered	Normal
NA 29	FAN	Present	Registered	Normal
NA 30	FAN	Present	Registered	Normal
NA <JS-NJ-				
YFXJ-BAS-1.MAN.NE40E-X16>				

Check the board card at 58.217.71.70

Sub-scenario-2:Device Offlinex

The system automatically verifies that the ping test of the off grid device is normal and the business is normal.

昨天 16:15

设备18.1... ping测状态为正常

范群群 互联网基础维护部 处理描述: 手工操作1964967236999458816告警恢复

The device ping test is normal, and both the subordinate A device and BBU are online.

【自动验证】1条告警: 第1条告警(告警尾号458816建议: 结单)【】反馈: 设备JS-XZ-SN-S... ping测正常, 登录正常, 下联A环10个, 涉及114个A设备, 当前均无脱网, 下挂BBU408个, 均未出现退服问题。

四叶草云网事件处置机器人 自动化处理接单岗

Sub-scenario-3:Optical Module Failure or Optical Power Abnormal

The system supports automatic alarm verification.

告警校验	告警内容	发生时间	告警状态	处理描述
告警校验	告警内容: [redacted]	2025-11-17 17:40:19	已告	告警均已恢复
告警校验	告警内容: [redacted]	2025-11-17 17:40:00	已告	【自动验证】1条告警: 第1条告警(告警尾号400000建议: 结单)【】反馈: portapon_0k-15/13光模块已就位, 告警均已恢复

Execution and verification-2

Service capability	Weight	Question	Option A	Option B	Option C	Option D
Execution and verification	10%	Does the system support automatic execution and verification? Does the system support assistance for on-site engineers?	1) The system supports automatic execution and verification of emergency restoration and repair solution. (Automatic repair excludes the faults that on-site handling is necessary, such as power supply failure, board fault, fiber cut). 2) The system support intelligent on-site instruction and efficient information query based on simplified human-system interaction.	1)The system supports automatic execution of emergency restoration and repair solution. Manual verification is needed. 2)The on-site handling are assisted by tool.	The system support automatic execution of emergency restoration. Manually execute repair solution. Manually verify by analyzing system data (e.g., alarms)	

Example evidence for option A:

For faults that the system can automatically repair, the system will automatically execute emergency plans to quickly restore business.

For faults that require manual on-site handling, the system supports intelligent on-site guidance and efficient information retrieval. Input natural language and the system automatically recognizes user intent. Automatically log in to the device for status checks, improving the efficiency of on-site maintenance personnel.

Sub-scenario-4: Port Failure

Sub-scenario-5: High Error Rate

电路流量卸载流程(劣化电路信息): 设备: JS-WX-HX-CR-1.MA5...E5C0E E0
端口名称: GigabitEthernet2/3/0/8, **对端设备名称:** JS-WX-JY-HTJ-445...K4%JL141

Automatically executes the emergency recovery plan to restore services.

端口当前流量数据: GigabitEthernet2/3/0/8 带宽: 10.0G, 利用率: 0.05%(in), 1.80%(out)
 GigabitEthernet1/1/1/23 带宽: 10.0G, 利用率: 0.05%(in), 0.80%(out)
 GigabitEthernet1/13/0/8 带宽: 10.0G, 利用率: 0.05%(in), 2.40%(out)
 GigabitEthernet2/1/1/0 带宽: 10.0G, 利用率: 0.06%(in), 1.50%(out)
 卸载后同向端口利用率预计: 0.07%(in), 2.16%(out) 磐石云平台准备开始进行流量调度...

电路流量卸载流程: 配置isis被动接口下发完成

电路流量卸载流程: 卸载成功

端口流量卸载后流量检查

端口当前流量数据: GigabitEthernet1/1/1/23利用率: 0.05%(in)& 1.04%(out),

Sub-scenario-6: Protocol State Abnormal

【拓朴式结构智能体—端口子流程】
工单编号: [2025091003413]
JS-HA-JH-JSLJ-L-1.MCH.CX600-XR(4.41.0.187) 端口: GigabitEthernet2/1/1

【设备当前配置信息】

【设备端口状态信息】

Sub-scenario-7: VPN Degradation

The system supports human-computer interaction to query VPN services

Sub-scenario-8: VPN Interruption Automatic alarm verification

时间	内容	工单编号	状态	详情
2025-10-28 08:15:00	快速报警中心处理报警【WEB】	[17248344186]	处理中	请速处理报警中心报警
2025-10-28 08:17:18	【业务报警】	【业务报警】	处理中	【业务报警】
2025-10-28 08:17:20	【业务报警】	【业务报警】	处理中	【业务报警】



Thank you

