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open innovation catalysts

AN L4 Digital Twin ensures maximum service reliability

TM Forum's ANL Assessment tool in a live network, and pilot GAP analysis to help CSPs on their AN journey

The solution:

This Catalyst applies TM Forum's AN Level (ANL) assessment tools to live networks, helping CSPs benchmark, validate, and accelerate their automation maturity. By linking evaluation to practical next steps, it provides a clear, scalable path toward Level 4 autonomous operations.

Addressing the challenge:

The goal of the project is to develop a real-time network emulation platform to implement a digital twin for intelligent, automated network verification — enabling perception, decision, and execution without manual intervention, targeting zero accidents in IP networks.

Digital Twin Solution: Using Huawei's iMaster NCE Network Digital Map and next-gen CMOS simulation to overcome limitations of traditional simulation (either too lightweight or too resource-intensive).

Key Capabilities: Enables precise analysis of IGP/BGP routing, LDP/RSVP sessions, and traffic flow changes; delivers preemptive routing and traffic verification to detect misconfigurations and risks before deployment.

> The network change emulation platform has been pilot-deployed in Henan Mobile's live network, where it has accurately simulated high-risk operations during live network migration and maintenance on multiple occasions.
>
> This has enabled proactive detection of critical issues such as routing policy misconfigurations, dangling ACL configurations, and routing loops, with emulation results achieving complete consistency with real-world operational outcomes. The platform effectively addresses the longstanding challenge of insufficient risk identification in manual migration plan reviews.

Yikai Dong
Network Maintenance Manager

中国移动 China Mobile

Business impact:

0 human-induced faults
network change process **< 4 hours**
configuration simulation time **< 10 minutes**
94% O&M efficiency
Gain 57 digital employees

Champions:

CAICT 中国信通院 | 中国移动 China Mobile | 中国联通 China unicom | 中国电信 CHINA TELECOM | indosat OOREDOO HUTCHISON

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