



# National Network Monitoring

**Zero-touch automated 24/7 test runs at several locations:**

Distributed Service Assurance for Mobile, Fixed & IP Networks and Services

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Can Davutoglu, February 2026





The QiTASC promise

**We ensure your network works flawlessly –  
every time, everywhere.**





# Challenges

# Solution

## The "Green Dashboard" Paradox

Passive monitoring shows network elements as functional, while customers cannot make calls or send messages because service logic is broken.

## Heterogeneous network

Heterogeneous technology stack (RAN/Core/IMS, fixed, IP/MPLS/TAS/IN) and multi-vendor domains with various device types, SIM profiles and service configurations.

## Complexity of Multi-Service & 5G

Web errors often occur in specific combinations. Standard monitoring cannot simulate edge cases effectively.

## Evidence pack

Need for trusted evidence (PCAP, logs, traces, CDRs) with minimal operational overhead always in relation to the real-world use case.

## Active monitoring

Active end-to-end testing with real smartphones at remote sites to execute real world customer journeys permanently at different locations, instead of just checking if a server is "up".

## Flexible, rule-based verification

Continuous testing, flexible decoders, abstraction layers for APIs, and service know-how ensures reliable validation, and reporting.

## Test abstraction

Abstraction layers normalize vendor differences, enabling 24/7 testing of hundreds of service, configuration, and user permutations across devices, tariffs, brands, and regions.

## Actionable insights

Expected result according to test cases run and automated diagnostics, negative-path validation, and KPI-driven reporting transform test results into clear, actionable outcomes based on artifacts.



# 3 reasons why your network monitoring will be successful.

1

**Transparency:** You see exactly what the user sees. Real world use cases run at various locations, any time of the day.

2

**Fully automated and felxible:** Zero touch, true end-to-end testing done with real devices fully automatically, from test case development until reporting. Open-source extensibility, and automated evidence correlation.

3

**Efficiency:** We have consolidated dozens of fragmented tool capabilities into one scalable, secure ecosystem. Scalable, telco-grade operations with proven acceptance expertise, reusable assets across environments and suppliers, as well as parallel execution for complex multi-service testing.

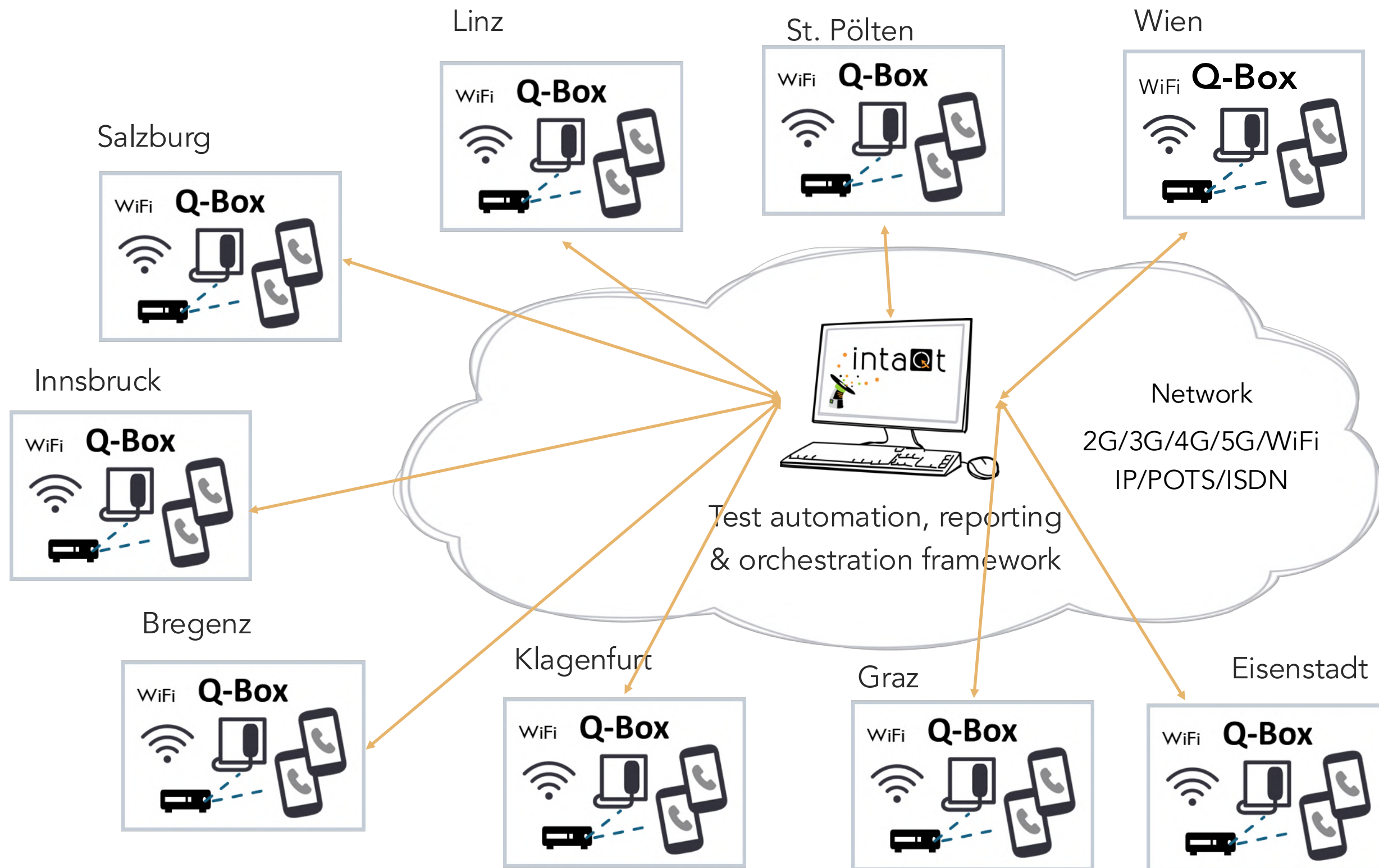
# Real world use cases executed from geo-distributed nodes (mobile, fixed, IP)



#	Domain	Customer journey (example)	Primary KPI
1	<b>Voice (CS/VoLTE/VoNR)</b>	MO/MT call, setup, handover, codec/MOS	CSSR, setup time, drop rate, MOS
2	<b>Messaging</b>	SMS/MMS send/receive, delivery confirmation	Success rate, delivery time, content, length
3	<b>Data / Internet</b>	Attach/PDN/5G PDU session, browsing, speed test	Latency, jitter, packet loss, download/upload speed, signal strength
4	<b>Wi-Fi Calling</b>	Registration, call setup, roaming between Wi-Fi and LTE/5G	Setup time, MOS, call continuity
5	<b>USSD / Service codes</b>	Balance check, service menus, short codes, top-up	Success rate, response time
6	<b>Fixed Broadband</b>	PPPoE/DHCP, DNS, HTTP(S), VoIP	Availability, throughput, DNS time
7	<b>Fixed IP</b>	VoIP calls, POTS/ISDN via STB, SIP trunk	Success rate, setup time, drop rate, MOS
8	<b>Enterprise Services</b>	Mobile/IP Centrex, Multi SIM, VAS, ...	Success rate, MOS, drop rate, notifications
9	<b>Consumer Services</b>	OCS/CCS, IVR, VM, RBT, ...	Success rate, MOS, drop rate, notifications, charging accuracy
10	<b>Charging all scenarios</b>	All services	CDR completion, CDR exception rate, Parameter statistics, etc.
11	<b>Roaming</b>	Attach + key services under roaming profiles, e.g. welcome SMS	Success rate, policy compliance
12	<b>APPs and Self Service</b>	All services	Success rate, crash rate, availability %, response times

## How it works

# Architecture for network monitoring



## Services:

- Advanced Router Testing
- Airport communication system testing
- Automotive Infotainment
- Convergent Charging System CCS/OCS
- Cell Broad Cast Service /Emergency notification
- Charging Verification (Voice, SMS/MMS, Data, Events)
- Critical infrastructure
- Centrex / Corporate PBX/VPN
- Device Testing
- Fixed Network
- Hospital Information Systems
- IoT testing
- IVR & VM testing
- Mobile PBX / IP PBX / Cloude PBX
- Multi SIM
- MVNO
- National Monitoring / Roaming
- Railway VPN, Railway communication service
- Ran 2G/3G/4G/5G/Wi-Fi/VoLTE RAN Testing
- Tele health
- Voice-bot testing

# What we automate (core automation capabilities)

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Qitasc operates in a zero-touch mode: schedule → execute → evidence → analytics → reporting.

## Device & access automation

- Real UE control (Android/iOS Roadmap)
- eSIM/SIM profile management
- RAT selection & Wi-Fi calling
- Fixed POTS/ISDN/VoIP control
- Set top box control & ui integration

## End-to-end service journeys

- Voice: CS/VoLTE/VoNR MOS
- Messaging: SMS/MMS
- Data: attach/session/browse/throughput
- USSD and service codes
- IP services (DNS/HTTP/VoIP/VPN)
- APP and Self Care

## Evidence & traceability

- Logs & screenshots, device logs
- Packet traces (PCAP)
- Protocol decoding
- CDR collection
- Test framework logs (false positive analysis)
- Chain-of-custody links
- MOS measurements for voice scenarios

## Scheduling & orchestration

- 5 -15 minute regression loops
- Parallel execution across nodes
- Rate limiting & load policies
- Maintenance windows & freeze periods
- Multi-tenant test catalogs

## Analytics & diagnostics

- KPI trend analytics
- Anomaly detection
- Pattern-based root cause hints
- Correlation with RF + topology
- Drill-down to per-test evidence
- Automated trace comparison
- CDR verification


## Integrations


- NOC alerting
- OSS/KPI export
- Trace/CDR requests/collection
- APIs for data lakes
- Jira/ALM for project management
- Git for version control
- Secure roaming site integration





# Platform Capabilities





 **Remote control:** Control test devices and lab equipment from anywhere.


 **Monitoring:** Real-time test run tracking and false positive analysis


 **Network element integration:** API integration to NE like HLR, AAA, CCS, PCRF, MME, EPG,...

 **Roaming integration:** Real roaming site connections


 **Multi-tenancy:** Isolated environments and devices per project.

 **Reports & KPIs:** Automated reporting and evidence collection.

 **Test automation:** Complete test automation framework.

 **Simulation:** Virtual test environments.


 **Authoring environment:** User roles and authoring profiles.


 **Result visualization:** Interactive charts and trend analysis.


 **Trace collection:** Trace collection (pcap), log, full evidence & audit trails.

 **Version control:** Test case and project versioning and rollback via git.

 **Security:** Enterprise security standards applied to all tools.

 **AI analysis:** Intelligent defect resolution and root cause analysis.

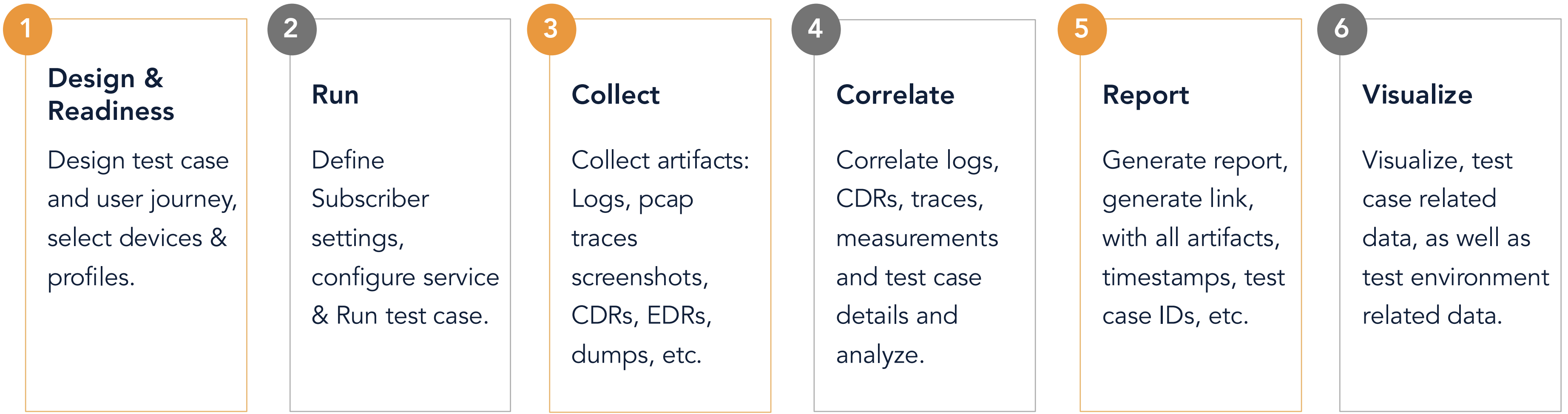
 **CI/CD integration:** Seamless DevOps pipeline integration.

 **Scalability:** Scale from 10 to 10,000+ tests, and 2 to 500 devices.



# End-to-end workflow

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**Outcome per run:**

consistent evidence, repeatable diagnostics, and stakeholder-ready reporting — without manual work.

# What now?



## Demo

Live at your office or via a video-call. Understand technical details.



## Proof of concept

A small project demonstrates our capabilities for your business case.





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**Get in touch, and consolidate your tool landscape!**

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# Glossary (A-Z)

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**4G/5G:** Fourth-/fifth-generation mobile access

**ACS:** Auto Configuration Server

**ADSL:** Asymmetric Digital Subscriber Line

**CI:** Continuous Integration

**CLI:** Command-Line

**CPE:** Customer Premises

**DSCP:** Differentiated Services Code

**DSL:** Digital Subscriber

**E2E:** End-to-end

**FTTx:** Fiber-to-the-x (fiber access variants)

**GHz:** Gigahertz (Wi-Fi bands: 2.4/5/6 GHz)

**IP:** Internet Protocol

**IPTV:** IP Television (service validation, KPIs)

**KPI:** Key Performance Indicator

**LAN:** Local Area Network

**MOS:** Mean Opinion Score (voice QoE metric)

**NAT:** Network Address Translation

**PCAP/pcap(s):** Packet capture file(s)

**PDU:** Power Distribution

**QoE:** Quality of Experience

**QoS:** Quality of Service

**RAL: Router Access Layer**

**RBAC: Role Based Access Control**

**RCA:** Root Cause Analysis

**RCE:** Router Configuration Engine

**RSSI:** Received Signal Strength Indicator

**SDSL:** Symmetric Digital Subscriber Line

**SSID:** Service Set Identifier (Wi-Fi network name)

**SSH:** Secure Shell

**TCP:** Transmission Control Protocol

**TR-069:** Broadband Forum CPE WAN management protocol

**TWAMP:** Two-Way Active Measurement Protocol

**VLAN:** Virtual LAN

**VoIP:** Voice over IP

**WAN:** Wide Area Network

**Web-UI:** Web-based user interface

**Wi-Fi:** Wireless LAN

**p95:** 95th percentile