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Centralized Link & Service Validation

Delivery testing: Where do you have to focus on and which values / parameters are important?

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Introduction

Service providers must validate the correct configuration and performance of new Link / Services at the time of service activation for many Applications including:

- Mobile - MBH & Small Cell
- Business
- Residential
- Wholesale

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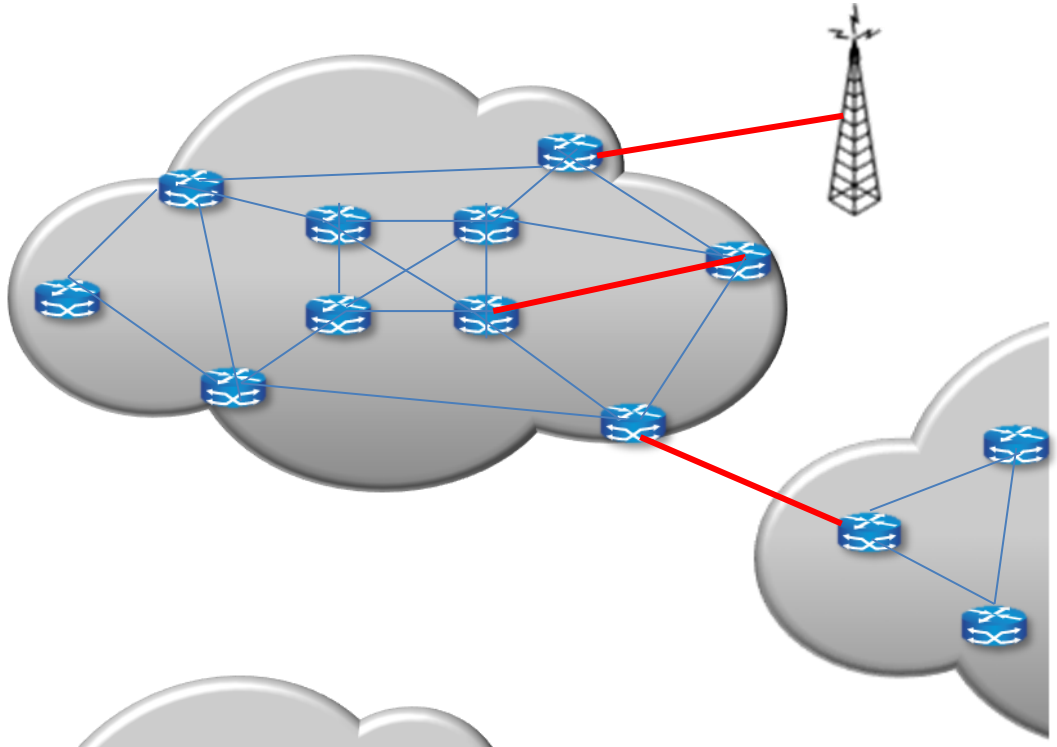
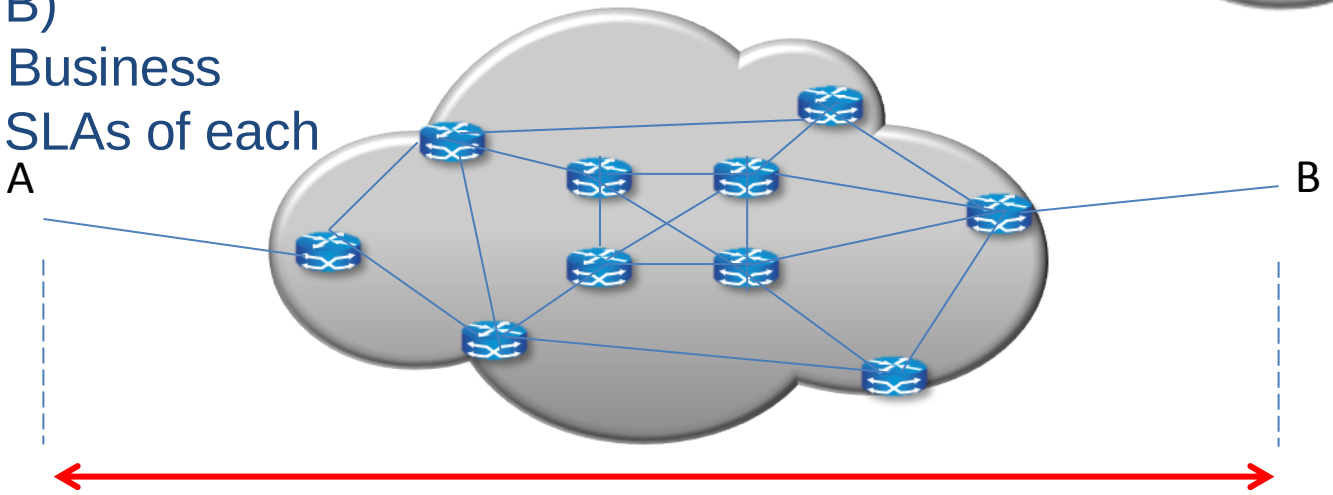
Today – What to test?

New link
SP internal need
To make sure that the new Network link is well configured and has the right performance



End to end (Between A & B)
Test Report requested by Business customer, to validate the SLAs of each E2E connection.



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Today – How to test?

Speedtest

Easy to use & Well known

Speedtest operates mainly over TCP testing with a HTTP fallback for maximum compatibility. Speedtest measures ping (latency), download & upload speed.

Problem

With this test several elements impact the test results.

PC <-> Local network <-> Modem <-> SP Network Infrastructure <-> Internet <-> Data center <-> SpeedTest server

When SP want to test only the new link between Modem and their core network

Portable devices – Handheld tester

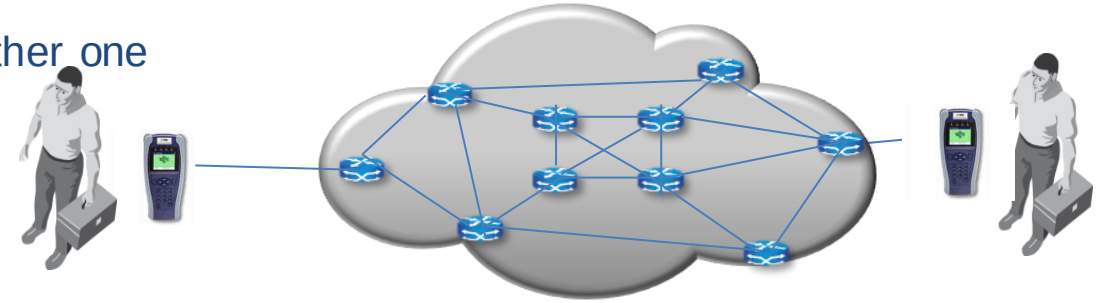
A lot of Handheld solution on the market

Field technician moving from one site to another one

Tester support all test required

Problem

Costly and time consuming



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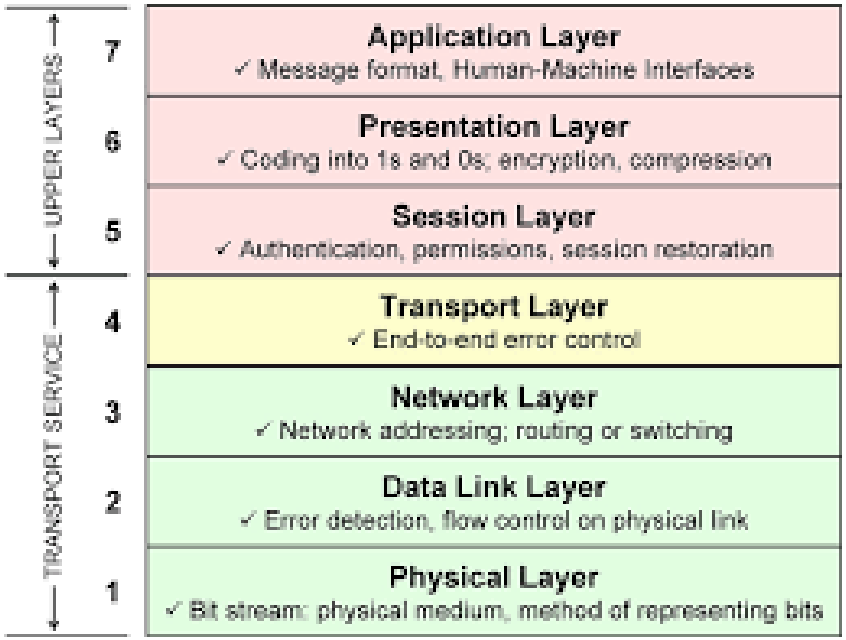
Standards

Test Methodologies:

- RFC-2544 from IETF
- Y.1564 from ITU-T
- RFC-6349 from IETF

RFC-6349 →

RFC-2544 & Y.1564 →



RFC-2544

- In 1999 IETF RFC-2544 has been designed to evaluate **Network Device** Performance **in the Lab**.
- Limitations:
  - Latency measurement – 1 frame every 2 minutes
- It doesn't support
  - Multiple Streams (Data, Video, Voice) in the same pipe
  - Frame Delay Variation (FDV) KPIs
  - Verification of configuration and performance of CIR
  - Committed burst size (CBS)
  - Excess information rate (EIR)
  - Excess burst size (EBS)
  - Colour mode (CM)

Important components of the bandwidth profile.

RFC-2544 benchmarking methodology is not applicable to service activation

Ref ITU-T Y.1564 (02/2016)

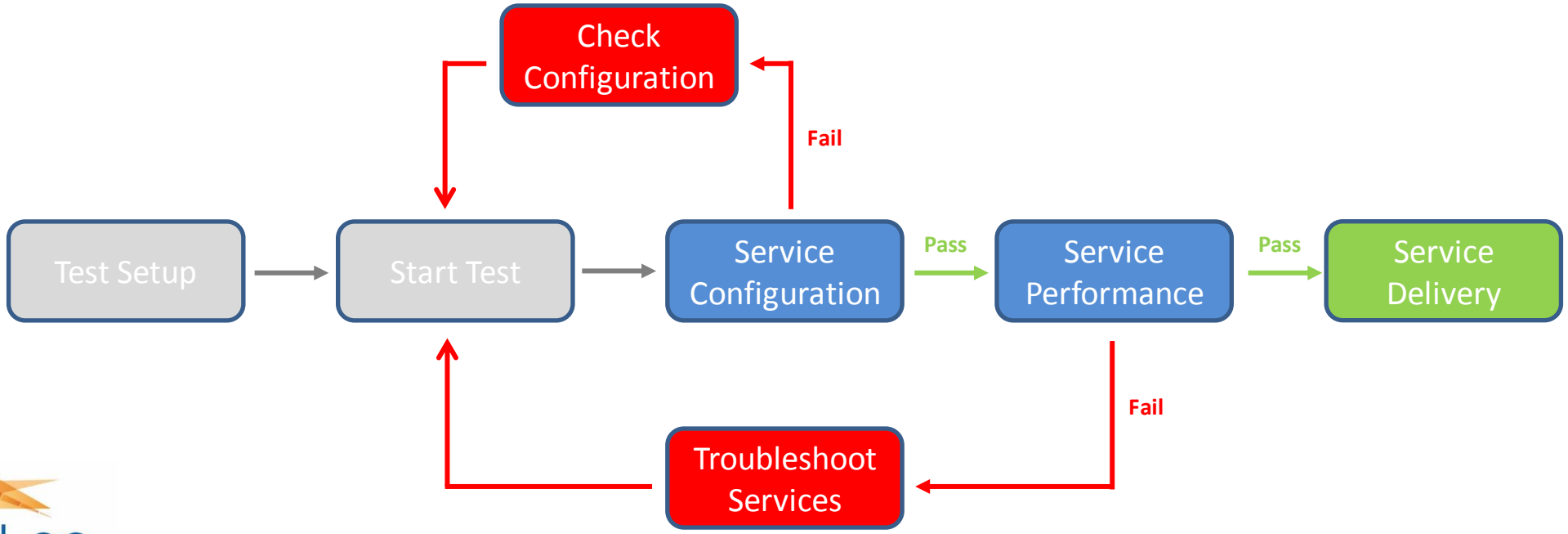
Y.1564

ITU-T Y.1564 has been defined in 2011.

This Recommendation defines an **out-of-service** test methodology to assess the proper configuration and performance of an Ethernet service prior to customer notification and delivery.

2 type of Test

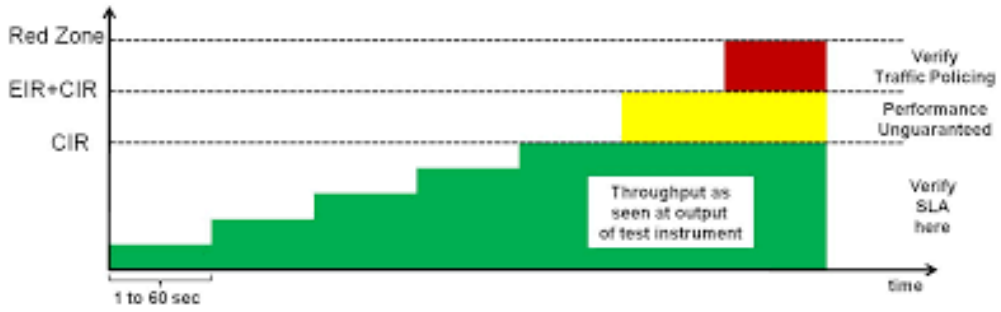
- Service configuration Test
- Service performance Test



Service Configuration Test

Validate the network configuration of each defined Service.

- CIR Test - Committed Information Rate
- EIR Test - Excess Information Rate
- Traffic Policing Test (optional)
- CBS Test - Committed Burst Size (optional)
- EBS Test - Excess Burst Size (optional)

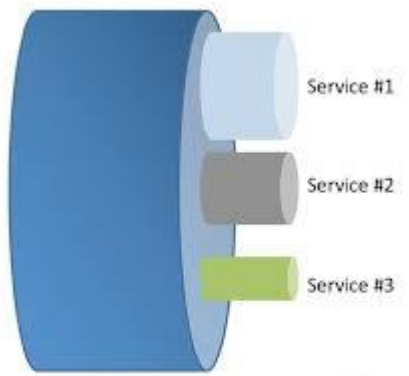


Y.1564

Service Performance Test

Validate the Quality of all Services.

- Test duration from 1 min to 24 Hours
- All services simultaneously within their CIR



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KPIs (Key Performance Indicator)

- IR – Information Rate – Throughput
- FTD – Frame Transfer Delay - Latency
- FDV – Frame Delay Variation - jitter
- FLR – Frame Loss Ratio - Packet Loss
- Service Avaibility

- One Way and Round Trip Measurement

RFC-6349

In addition to Layer 2/3 Service Activation testing, Network Provider start to use the RFC-6349 recommendation to measure TCP Throughput in order to ensure end user satisfaction.

This is an optional test but complementary to Y.1564.

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Agenda

- Introduction
- Today
  - What to test ?
  - How to test ?
  - Standards
- New approach
- Customer Use cases

New Approach -> New solution

2 Key Drivers for major changes

- **SDN / NFV**

Get rid of all dedicated Hardware for all Network Function and Services including Test Capabilities (Service activation, Network Performance monitoring and Troubleshooting).

Solution - Software based solution to be implemented in the new virtual network infrastructure.

  - Agility
  - Flexibility
  - Scalability.

- **Cost and Time reduction** to deliver new services.

Solution - Move from independent test solution to Centralized Service Activation

  - Resource sharing
  - Simultaneously test Multiple circuit
  - Eliminating Truck rolls
  - Various endpoints can be reached

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Customer Use Case 1 - Orange

- Handheld deployed across the network
- Remote access with VNC
- Test Result downloaded with FTP

Problems

- Internal policy limit VNC usage
- Test result not centralized
- Test launched manually
- No E2E test

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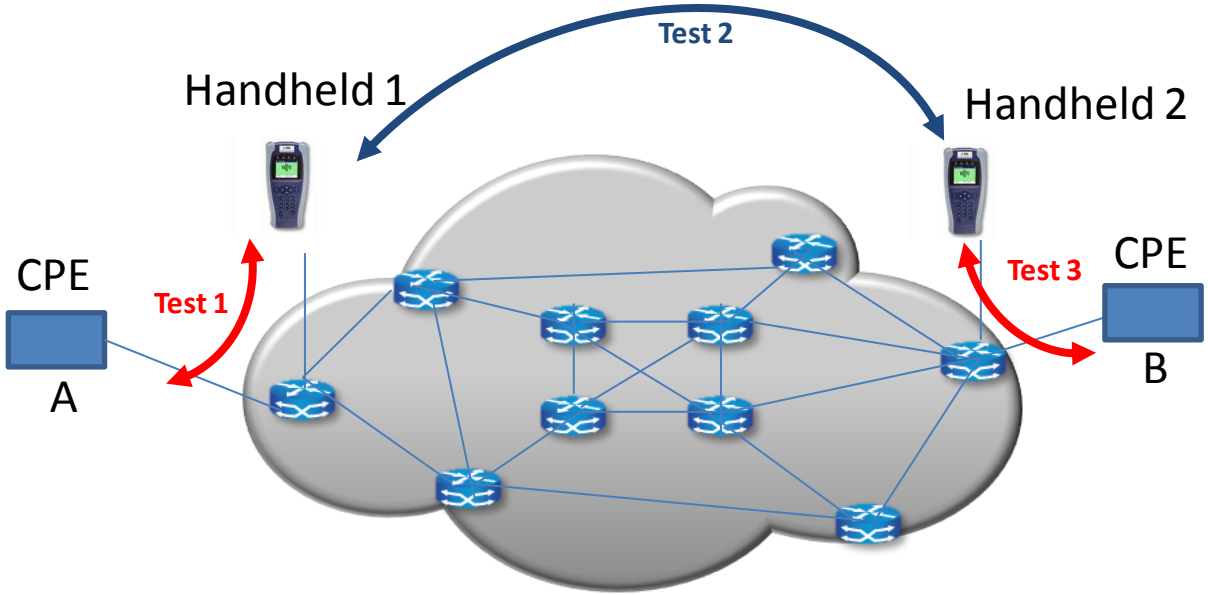
Customer Use Case 1 – Orange



Handheld cannot perform 2 tests at the same time ->

- E2E Test = Test 1 + Test 2 + Test 3
- Collect the 3 Test Result via VNC
- Aggregate Test Result 1, 2 & 3 in one File

NOC

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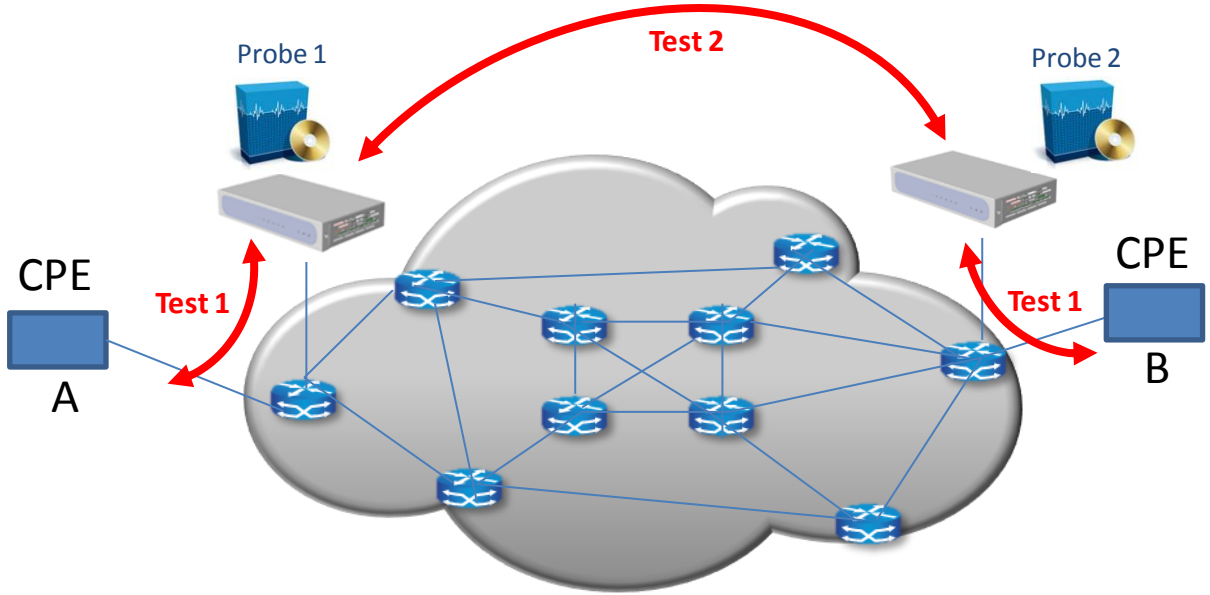
Customer Use Case 1 – Orange

New Approach

Centralized Link & Service Activation – Turn Up Testing

Layer 2 (Ethernet) & Layer 3 (IP)



Probes are either Hardware or Software

New approach with Centralized Link & Service Activation Test

- Test 1 & Test 2 done at the same time
- Tests could be automated / Scheduled

- All test are initiated from one Central point -> NoC
- All tests results are centralized

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Customer Use Case 1 – Orange

New Approach Benefits

- New Solution aligned with their internal policy
- Scalable Solution
- Test Result store automatically in one Central point
- Can perform End to End Test
- Solution ready for future

- Can Schedule & Automate Test -> Save Time
- Cost Saving
  - Shorter test time -> Faster delivery Services to customer
  - Licensing model

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Customer Use Case 2 – Service Provider

- Handheld on Customer site

- Driver -> Transition phase to SDN/NFV

Problems

- Handheld testers are not scalable with their new architecture
- Test result not centralized
- Test launched manually
- Cannot share easily Test report, Internally and with 3rd party

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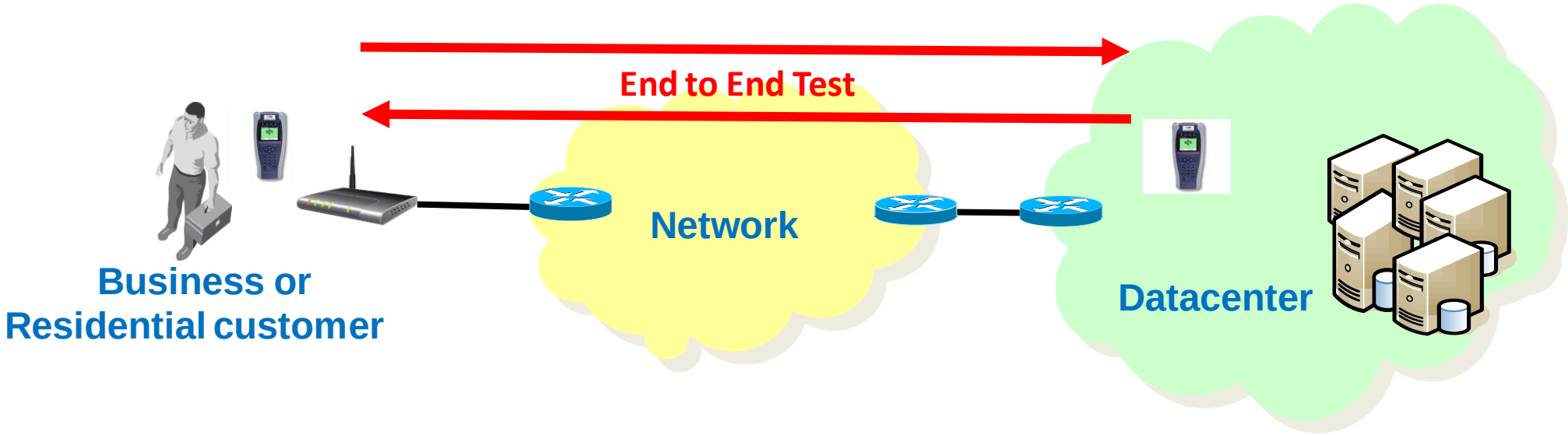
Customer Use Case 2 – Service Provider



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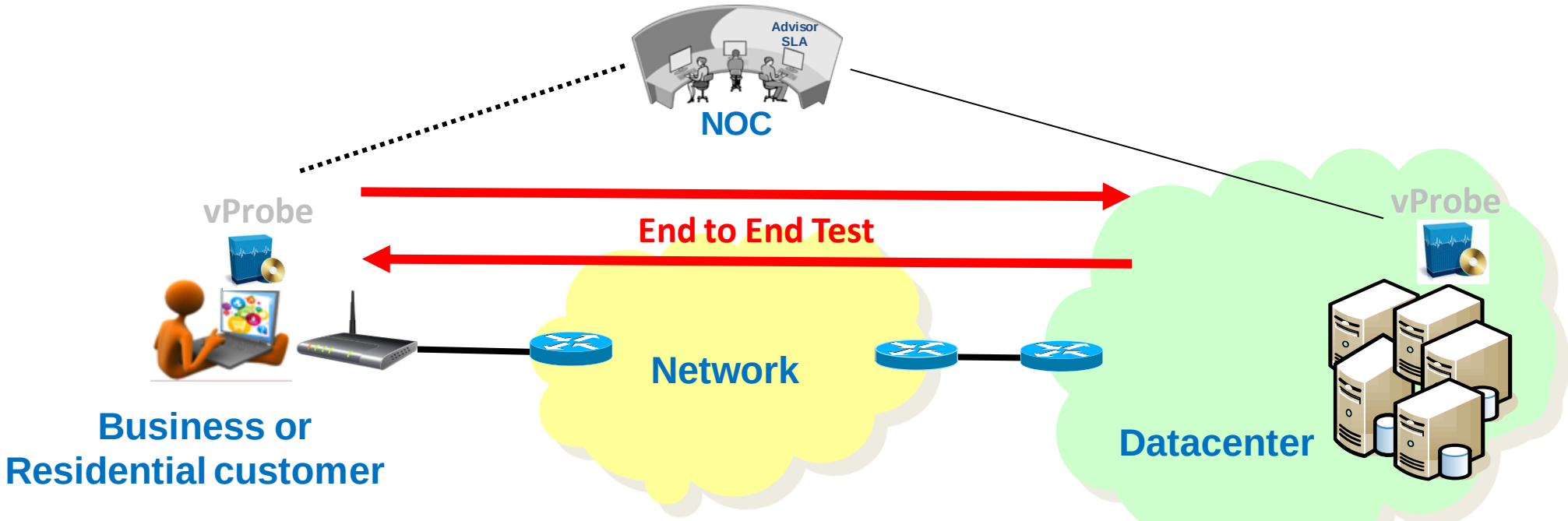
Customer Use Case 2 – Service Provider

New Approach



vProbe installed in

- Field technician Laptop
- Datacenter

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Customer Use Case 2 – Service Provider

New Approach Benefits

- New Solution aligned with the new Strategy
- Scalable
- Test Result store automatically in one Central point
- Test Result shared with Third Party
- Solution ready for future

- Cost Saving
  - Licensing model

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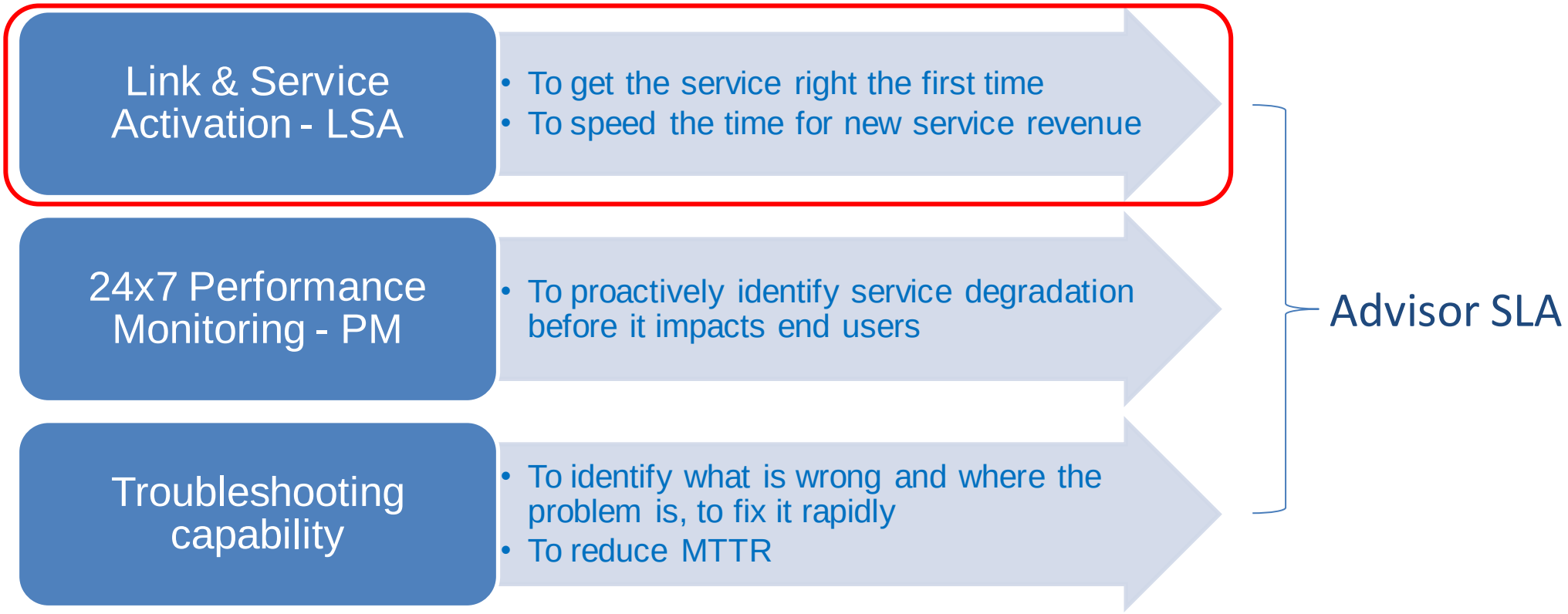

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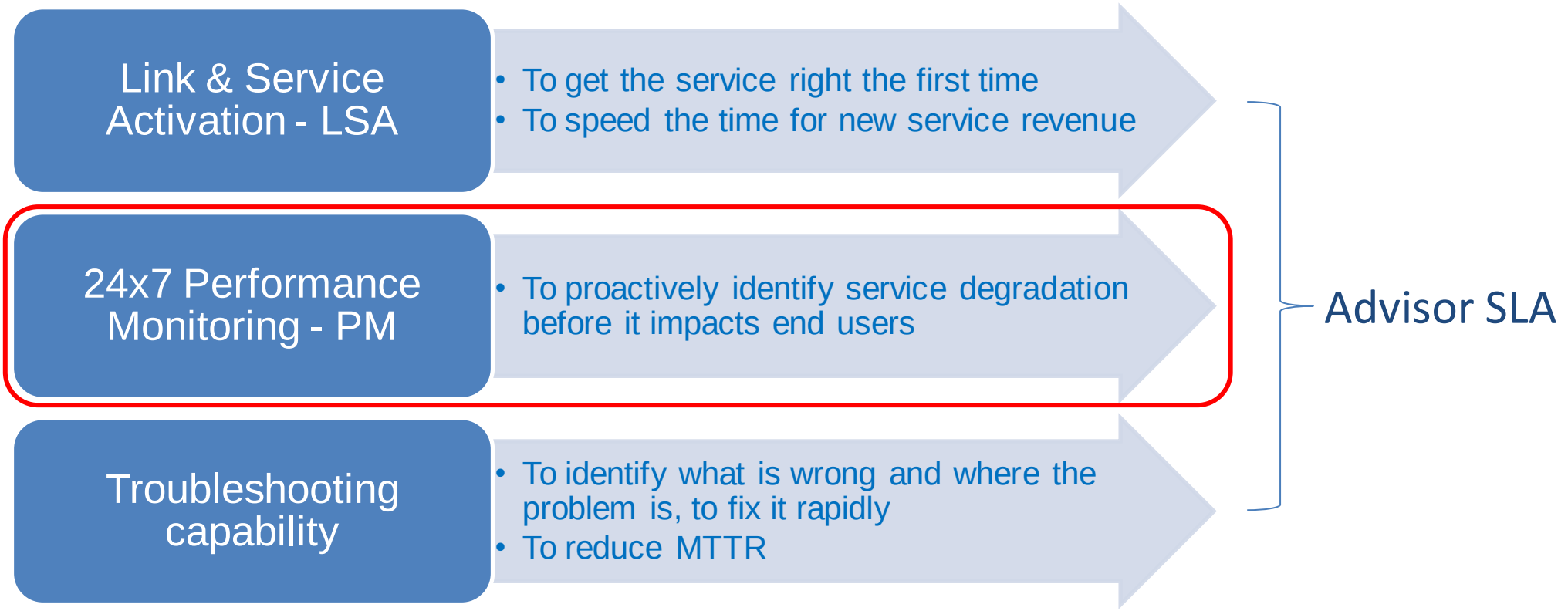
Advisor SLA Solution



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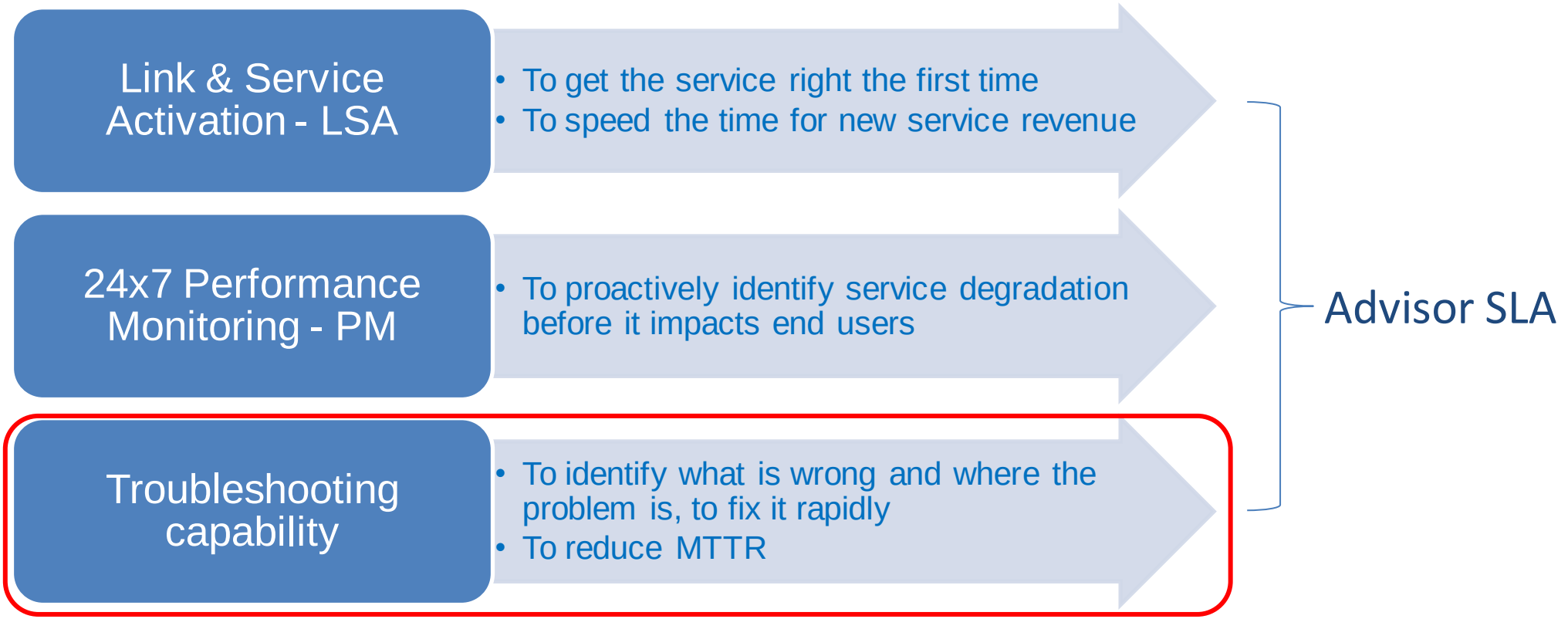
Advisor SLA Solution



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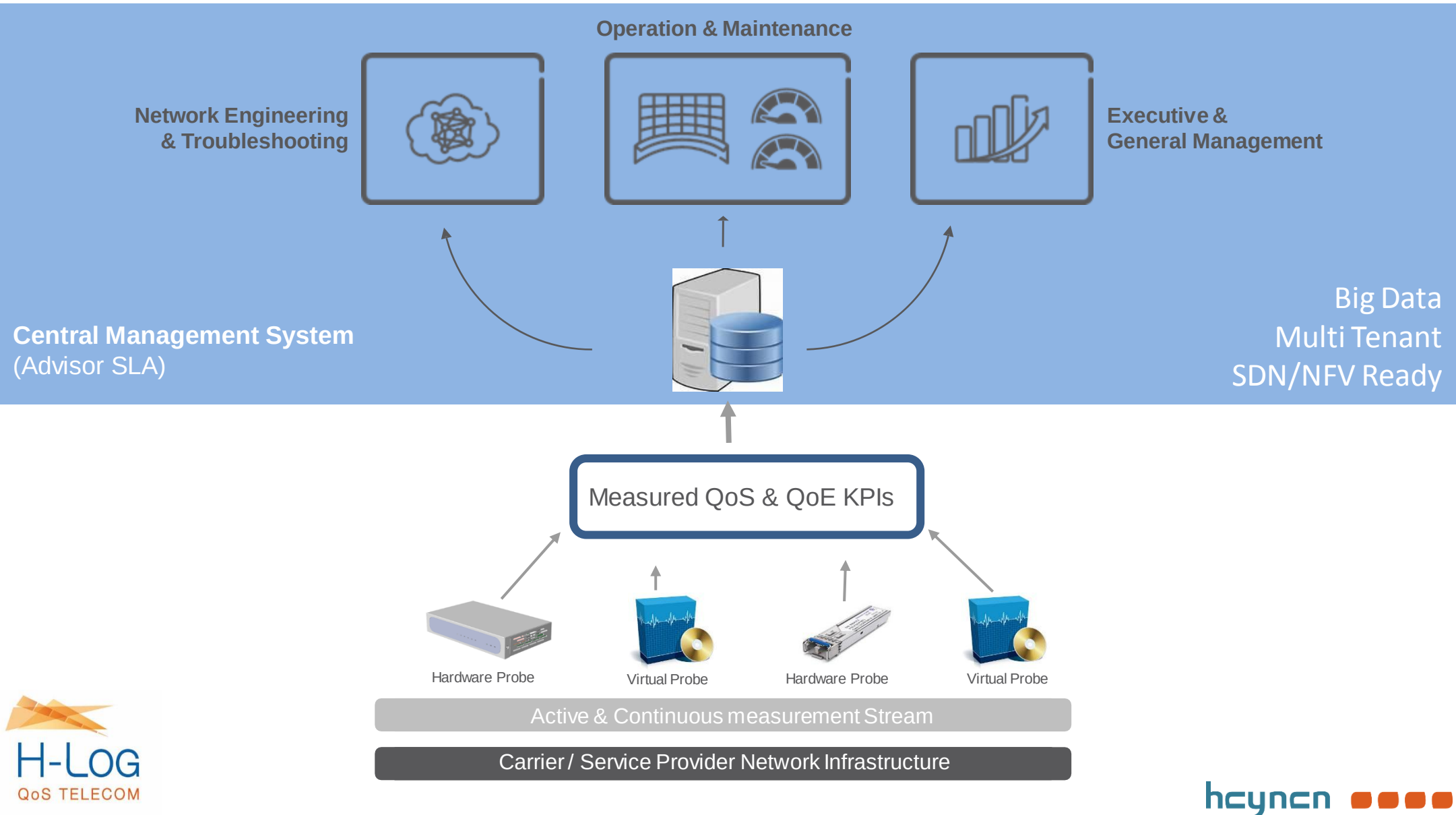
Advisor SLA Solution



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Thank You !