

THE BENEFITS OF

CLOUD-NATIVE SERVICE ASSURANCE

FOR TODAY'S NETWORKS

How cloud-native service assurance accelerates service launches, reduces costs and improves customer experience in physical and early-stage virtualized networks

Table of Contents

What is Cloud-Native?	3
The Evolution to Cloud-Native	4
Cloud-Native Service Assurance - Delivered	5
Cloud-Native Service Assurance - Benefits	6
Visibility, Automation, and Troubleshooting	7
Active Testing is Crucial	8
VisionWorks and NetDevOps	9

What is cloud-native (and why is it critical to NFV transformations)?

The ultimate goals of NFV transformations are rapid service innovation, dramatically reduced costs and better customer experience.

Cloud-native delivers these benefits by providing open interfaces, and a stateless, microservices architecture.

Realizing the promise of virtualization... ...requires a cloud-native approach!

OpEx Reduction

Common Platform
Operations Automation

CapEx Reduction

Generic Hardware
Increased Competition

Service Innovation

“Fast Fail”
DevOps

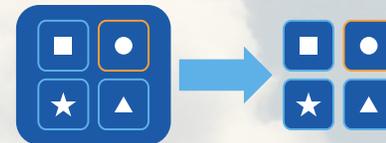
Customer Experience

Faster Service Availability
Self-Service Provisioning

Open-interfaces to enable rapid integration with the virtualization eco-system



Microservices architecture to allow efficient, independent scaling of network functions

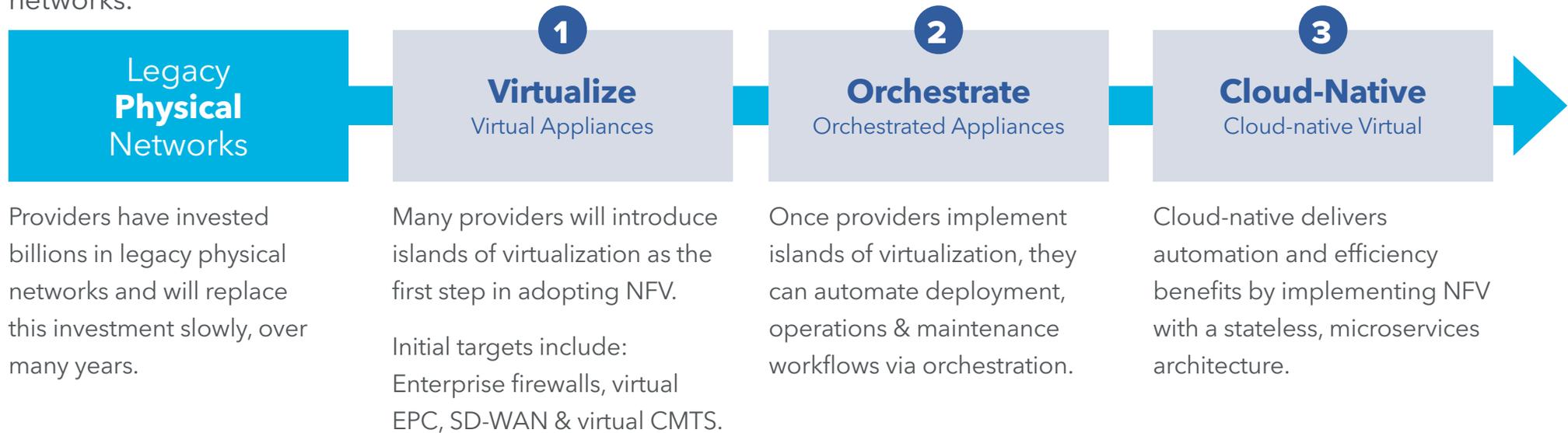


Stateless architecture to allow highly reliable deployment across data centers and seamless turn-up



The evolution to cloud-native networks will take years

While all major providers plan to transform to virtualized, cloud-native networks, most providers are still in the early stages and will operate hybrid networks consisting of physical and virtual network functions for many years. Just as Aston-Martin cars have evolved over time to dramatically improve racing performance, so service providers will evolve their networks with increasing levels of virtualization. Most providers will move to cloud-native virtual networks in stages, starting with the introduction of virtual appliances, then orchestration and finally a move to true cloud-native networks.



The evolution of Aston-Martin race cars



Aston Martin DB4 (1958)
0-100 mph in 21 seconds



Aston Martin V8 Vantage (1977)
0-100 mph in 5 seconds



Aston Martin Racing #95 (2017)
0-100 mph in 3 seconds



In physical networks, early-stage virtual “islands”, hybrid networks and more

Better visibility, automation & troubleshooting



In physical networks and early stage virtual networks, white boxes / NFVi may not be widely deployed or may not have the necessary compute resources. **VisionWorks VTP** (Virtual Test Platform) allows our microservice VTAs to be deployed anywhere, such as at customer premises or network locations even if white boxes or NFVi aren't available.

Widespread deployment of VTAs provides better network visibility, a better ability to segment network issues and the ability to automate more workflows.

Efficient scaling of service assurance



Need more horsepower for turn-up verification or performance monitoring? **VisionWorks Controller** consists of independent microservices. Scale only the required microservices, reducing resource needs.



VisionWorks VTAs include a catalog of microservice testing applications. VTA microservices have been optimized to consume minimal compute resources.

Zero down-time for maintenance releases



The stateless, microservices architecture of **VisionWorks** allows upgraded microservices to be deployed without requiring the whole system to be offline. Furthermore, new microservices may be turned up while old microservices are still running. Load may be gradually transferred to the new microservices ensuring high-reliability with no down-time.

Highly reliable geo-redundant deployments



Server offline? Entire data center offline? No problem! Stateless, service assurance controller microservices may be deployed across servers and data centers, ensuring an equipment or site failure won't have an impact on system availability.

Cloud-Native for better visibility, automation & troubleshooting

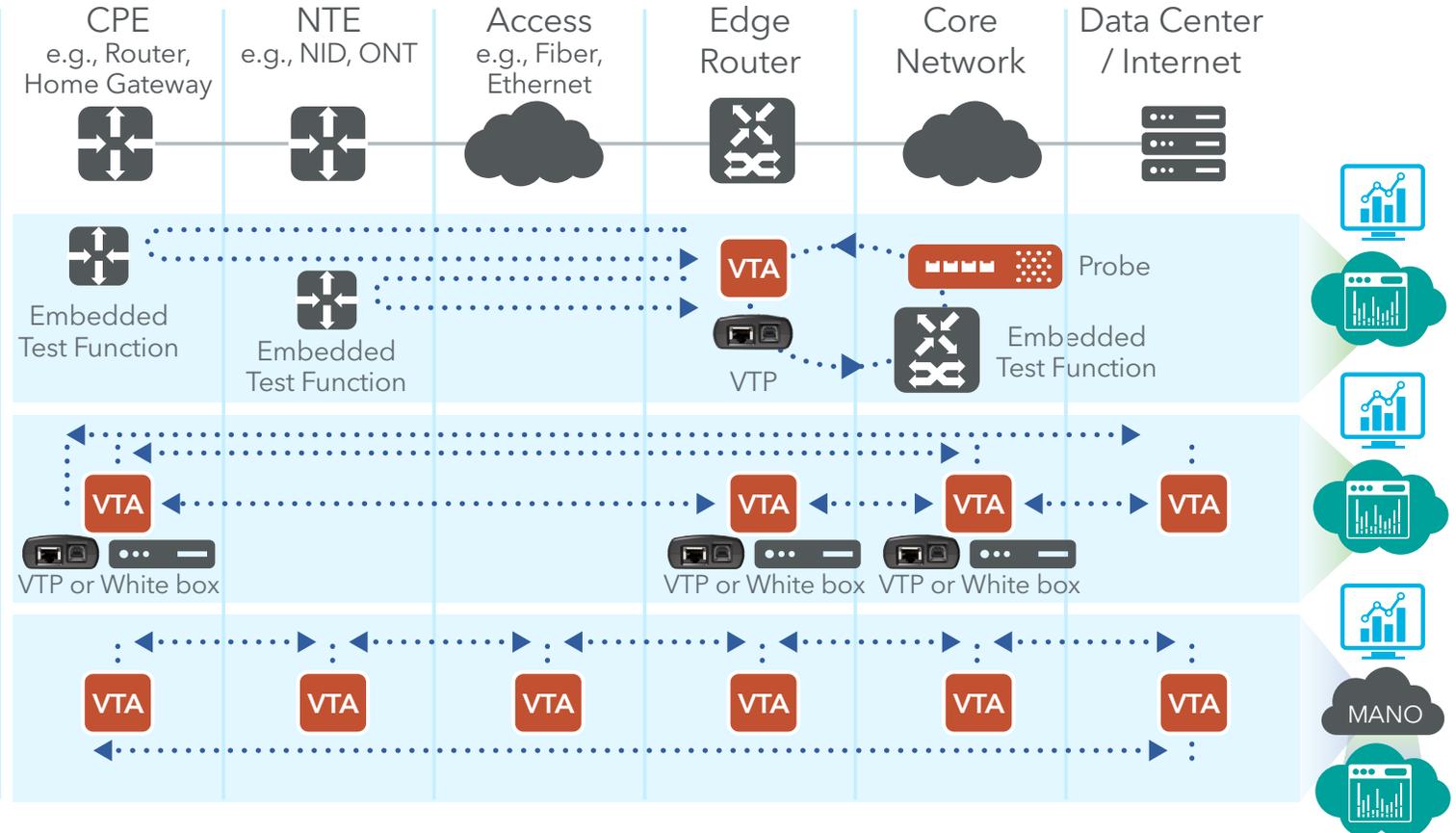
Benefits today, that increase as you virtualize your network

In physical networks, a mix of probes and VTAs may be deployed in key network locations and augmented with embedded test functions in CPEs, NTEs and network elements.

As virtual islands are introduced, VTAs may be deployed to premises and key network locations using VTPs or white boxes

With orchestration, service assurance may be seamlessly integrated to automate deployment, operations and maintenance workflows. VTAs may be instantiated directly on NFVI to support any VNF or service chain.

Increasing visibility and automation at each stage of virtualization



Why active testing is crucial for virtual networks

The delivery of services over virtual networks requires the instantiation of numerous Virtual Network Functions (VNFs) and service chains that integrate these VNFs. In order to verify that the turn-up process has delivered an end-to-end service which meets the customer’s service level agreement (SLA), active tests must be performed by Virtual Test Agents (VTAs) immediately after turn-up of new or upgraded customer services (aka service activation testing).

Without active testing using VTAs, the service provider will only discover issues as the customer begins to use the service and actually experiences degraded service levels. Such a reactive approach often leads to repeated dispatches, poor customer service, delays in customer revenue and, ultimately, customer churn.

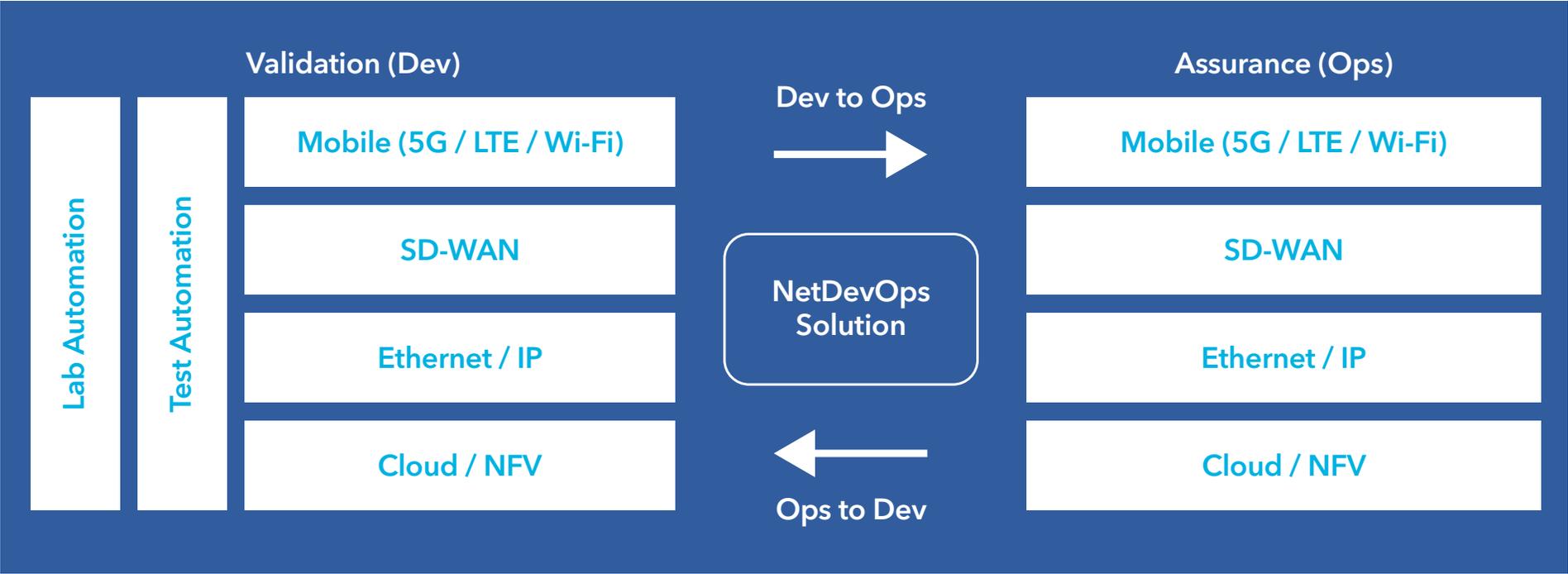
Once a new service is activated and operational, it can be proactively monitored using a similar approach to active turn-up tests, by continuously testing service availability and performance utilizing small amounts of synthetic user traffic. As with turn-up, active SLA monitoring provides proactive detection of fault conditions, potentially before the customer has even noticed a problem. The source of the fault can then be segmented by VTAs using a variety of automated troubleshooting techniques, saving time and operational costs, and improving customer experience.

Example VTAs for Transport Service Assurance: Business Ethernet & Residential Use Cases

Lifecycle Stage	Business Ethernet Service Assurance	Residential Service Assurance		
	Example Tests	Example KPIs	Example Tests	Example KPIs
Turn-Up	<ul style="list-style-type: none"> Y.1564 RFC 6349 	<ul style="list-style-type: none"> Packet Loss, Latency, Throughput TCP Bandwidth 	<ul style="list-style-type: none"> L4 iPERF Packet Loss 	<ul style="list-style-type: none"> TCP Bandwidth Packet Loss
SLA Monitoring	<ul style="list-style-type: none"> TWAMP 	<ul style="list-style-type: none"> Packet Loss, Latency, Availability, Jitter, Delay 	n/a	n/a
Troubleshooting	<ul style="list-style-type: none"> Y.1564 RFC 6349 	<ul style="list-style-type: none"> Packet Loss, Latency, Throughput TCP Bandwidth 	<ul style="list-style-type: none"> L4 iPERF Packet Loss 	<ul style="list-style-type: none"> TCP Bandwidth Packet Loss

Lifecycle Validation & Assurance for NetDevOps

As networks are virtualized, release cycles contract, putting extreme pressure on Dev and Ops to work together more efficiently. These teams need to work together seamlessly, but their silos are difficult to break down because they use different tools and systems. Enable Dev and Ops to work together as one with a unified approach to validation and assurance that spans the DevOps lifecycle.



Please visit www.spirent.com/Solutions/NetDevOps to learn more.

About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges.

Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

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