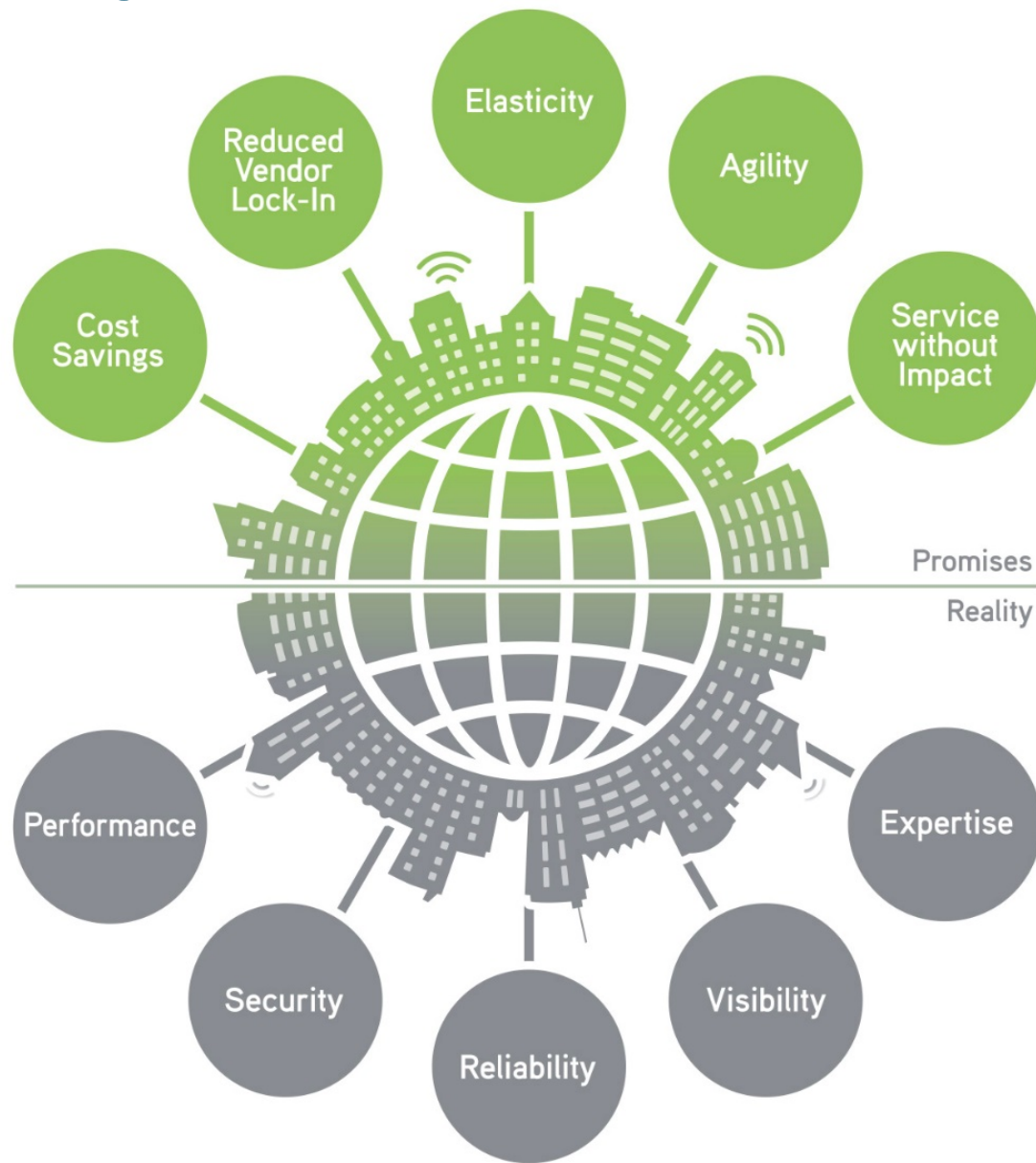




НАГРУЗОЧНОЕ ТЕСТИРОВАНИЕ SDN/NFV: УВЕРЕННОЕ ВНЕДРЕНИЕ И ЭКСПЛУАТАЦИЯ

SDN/NFV – преимущества vs реальность



РИСКИ И ЦЕНА ОШИБОК

60%

60% организаций, внедряющих NFV, не проводят полноценного тестирования

1_{YR}

Когда проблемы в конечном итоге возникают, их решение может привести к задержке внедрения новых услуг

12_x

Устранение проблем после внедрения стоит в 12 раз дороже

\$400K

Организации могут потерять в среднем \$400K+ за один час простоя

УВЕЛИЧЕНИЕ КОЛ-ВА ТЕСТОВ И ИХ СЛОЖНОСТИ

NFV Testing

Test the NFV platforms, VNFs, and services in isolation

VNF Onboarding & Testing

Dimensioning & Benchmarking

Validating Service Chains

NFV Infrastructure

Disaggregated Services

Data Plane Acceleration

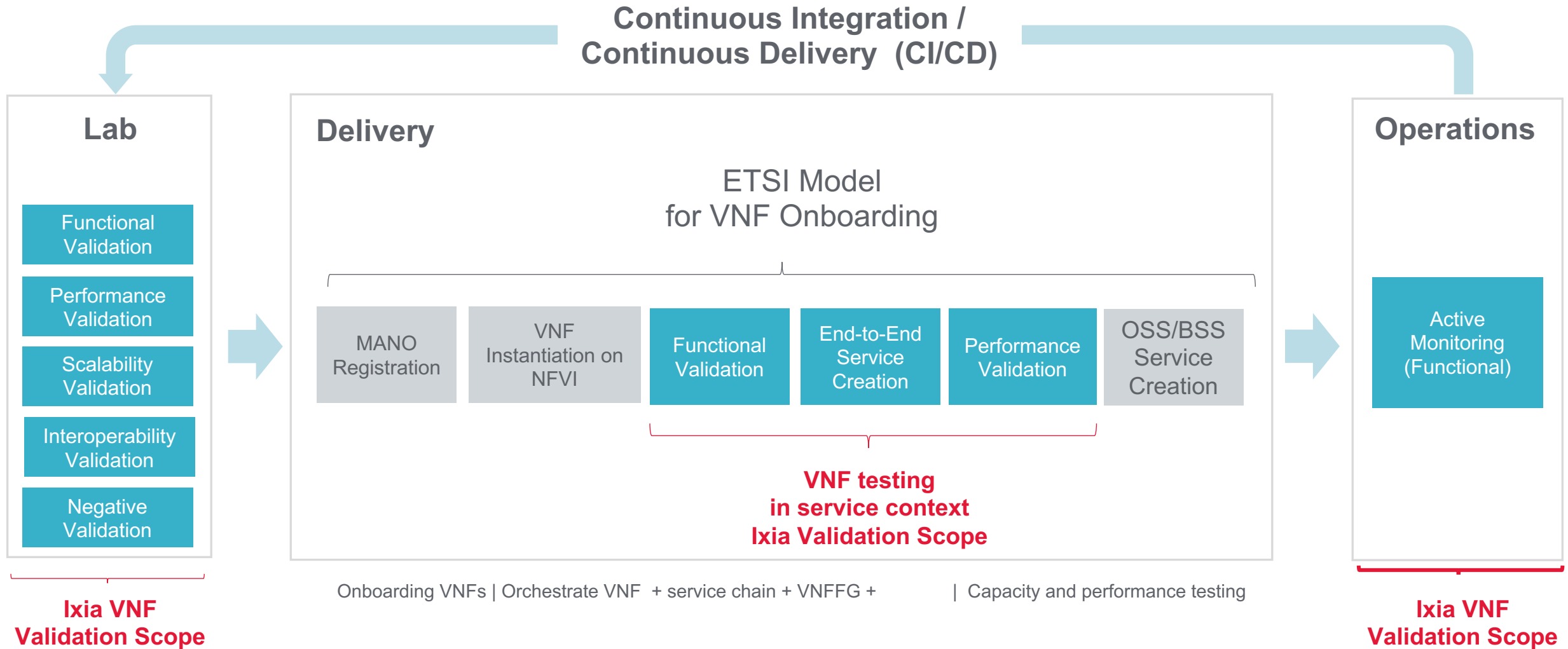
300%
more
test cases

Traditional Testing

Focus on Single Vendor

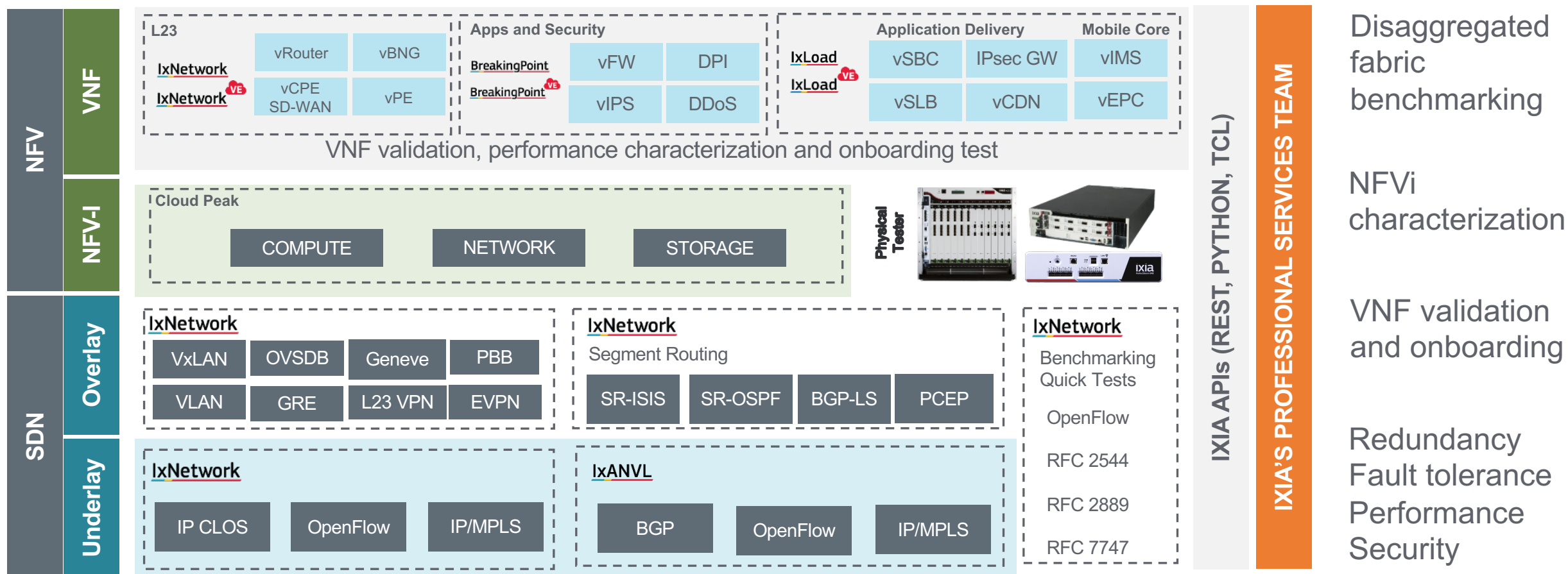
Performance Validation

ТЕСТИРОВАНИЕ НА ВСЕХ ЭТАПАХ



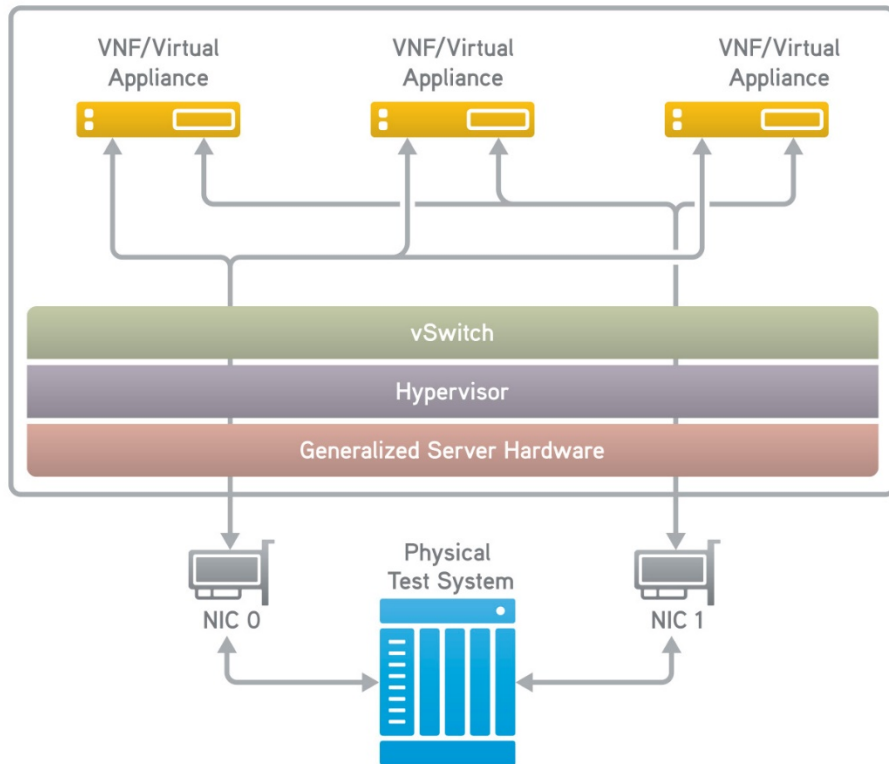
ЕДИНОЕ РЕШЕНИЕ

Полный комплект для успешного внедрения новых технологий

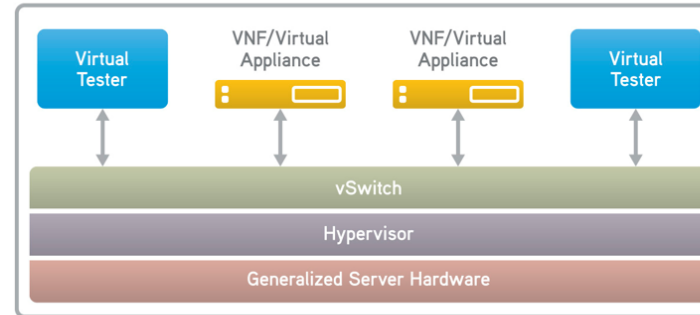


АППАРАТНЫЕ И ВИРТУАЛЬНЫЕ ТЕСТОВЫЕ СИСТЕМЫ

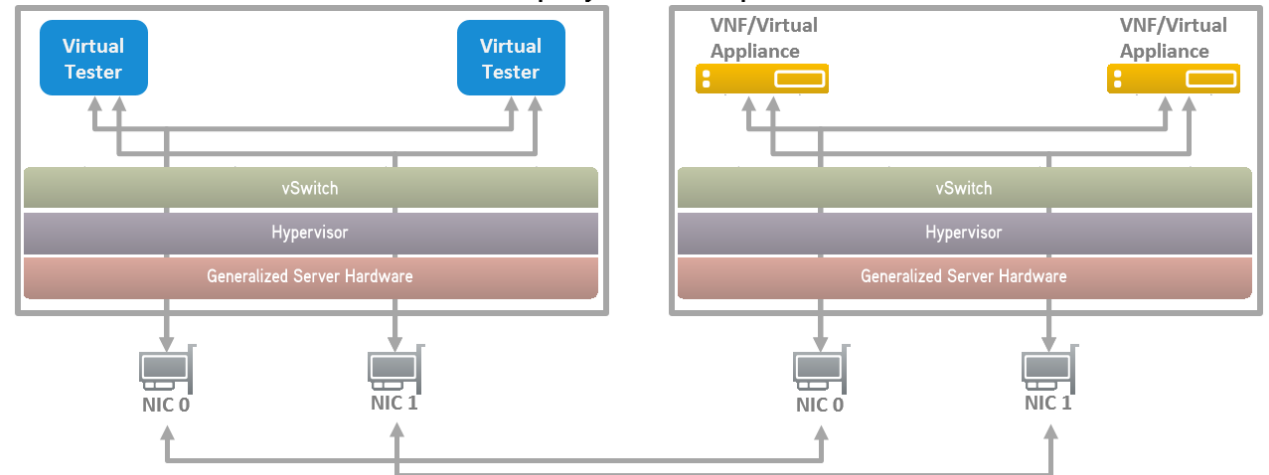
NFV-I and VNF Test using
a Physical Test System



Ixia VNFs and DUT VNFs
are collocated on same COTS hardware



Ixia VNFs and DUT VNFs are deployed on separated COTS hardware



ВИРТУАЛЬНЫЕ ТЕСТОВЫЕ ПОРТЫ ПО ПОДПИСКЕ

Цена	Доступные по цене лицензии на виртуальные версии продуктов ixNetwork, ixLoad, Breakingpoint
Функционал и мощность	Практически полный аналог аппаратных решений с линейным масштабированием мощности до десятков Гбит/с и выше
Срок действия	30 дней и 1 год Включены обновления и поддержка
Мобильность	Можно привязать лицензии на центральный сервер и предоставить в региональные подразделения
Первый шаг	Позволяют решить разовую задачу и почувствовать реальную пользу от внедрения решений по тестированию
Дополнение к проекту	Полезное дополнение к проекту для организации тестов приемки на стороне заказчика или помощи в настройке

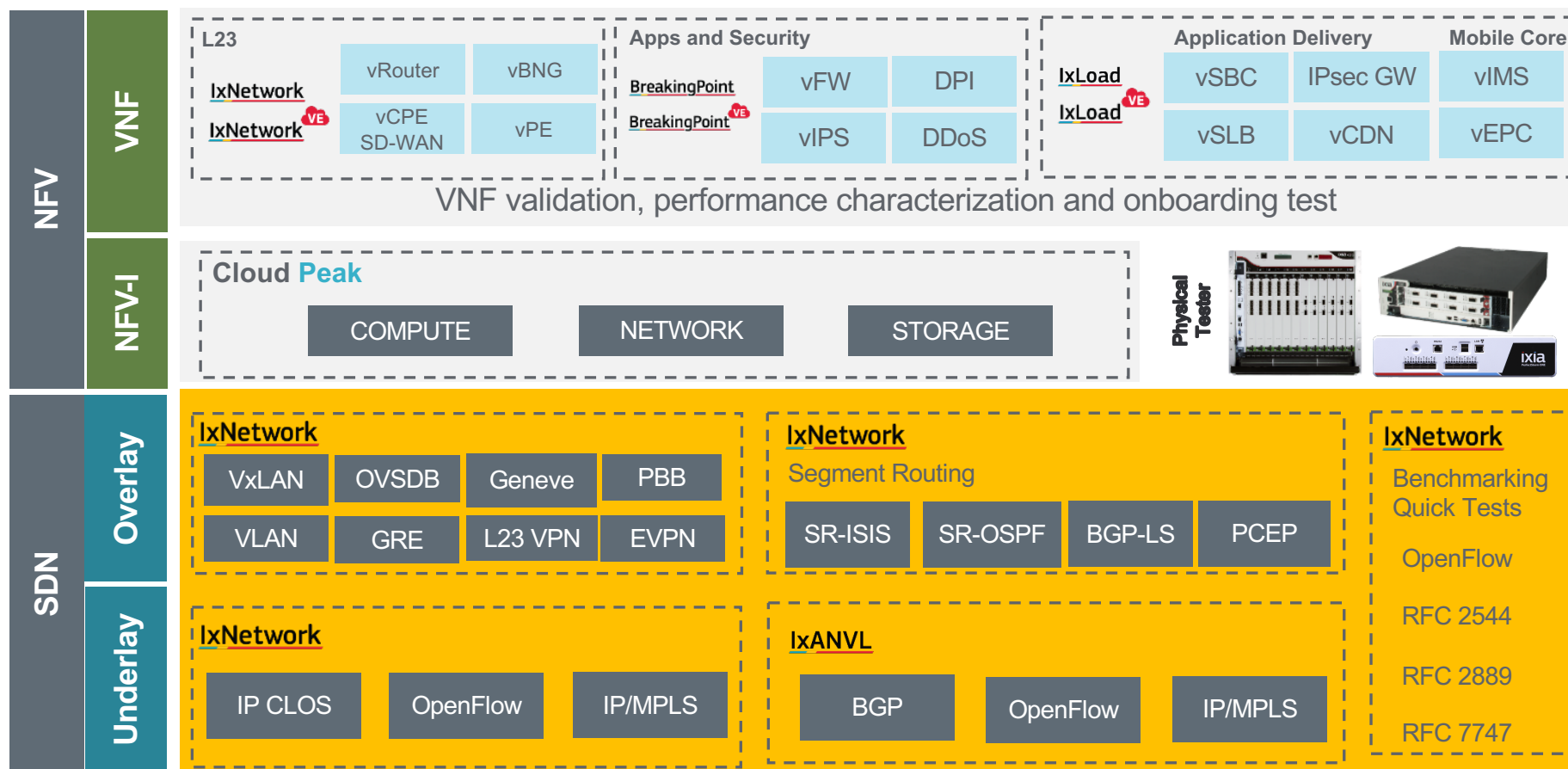
IxNetwork 

IxLoad 

BreakingPoint 



#1 ТЕСТИРОВАНИЕ SDN



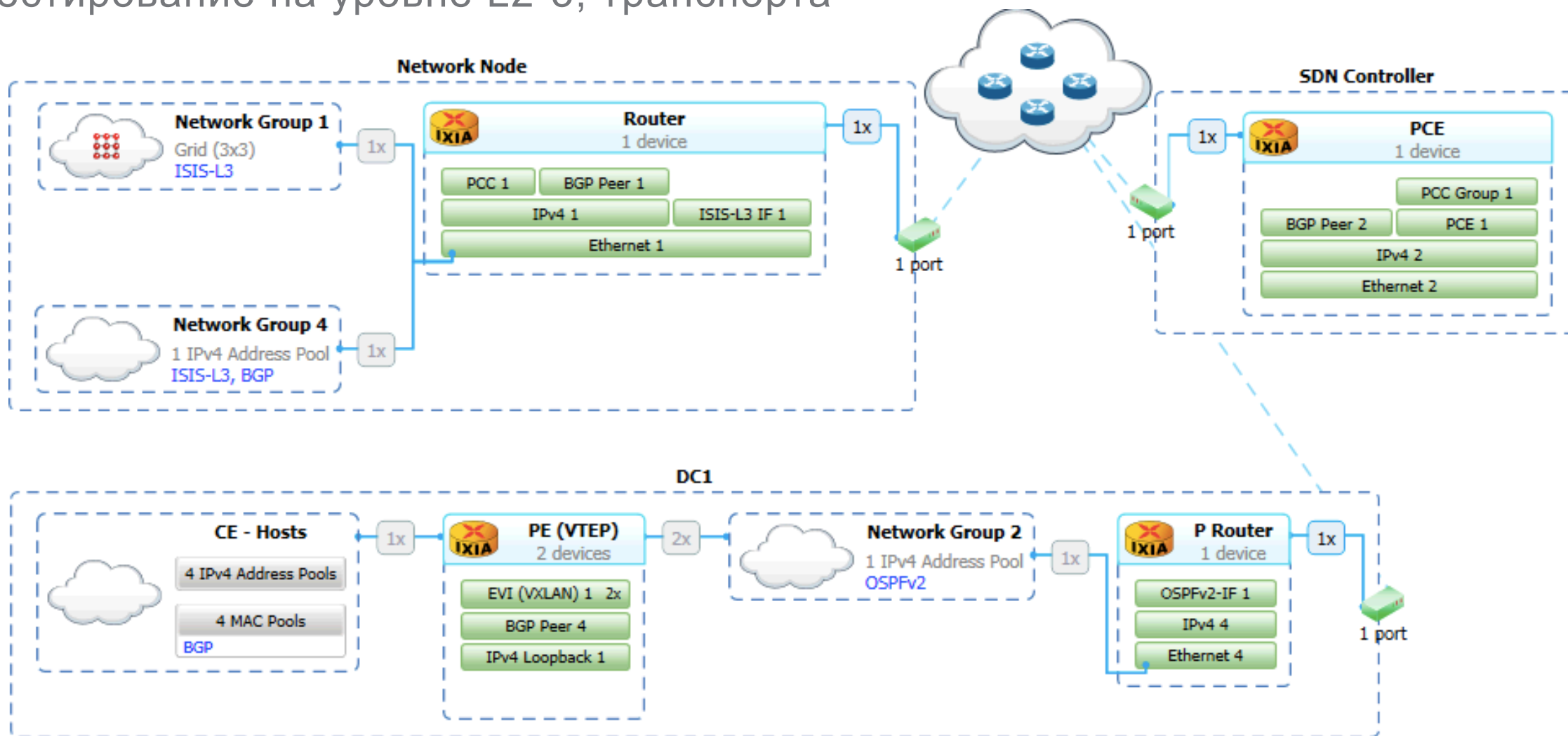
IXIA APIs (REST, PYTHON, TCL)

Lab-as-a-Service (LaaS)

IXIA'S PROFESSIONAL SERVICES TEAM

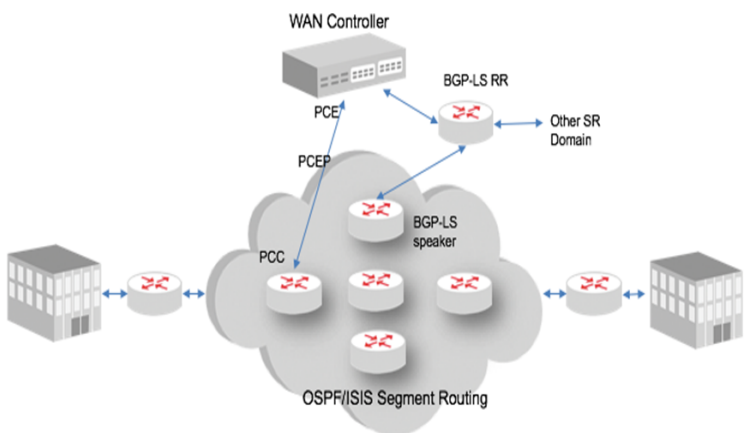
IXNETWORK

Тестирование на уровне L2-3, транспорта



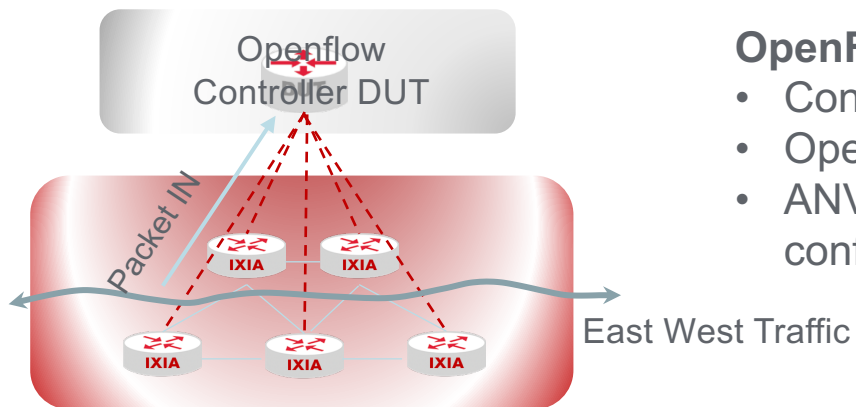
IXNETWORK СИМУЛЯЦИИ SDN

Симуляция сложных динамичных топологий и трафика поверх них



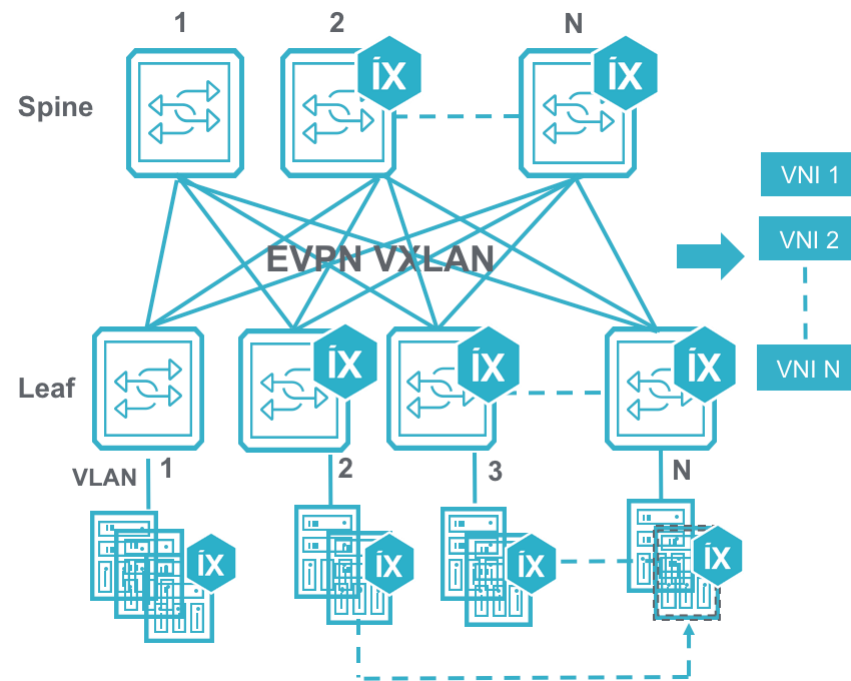
Carrier SDN

- Segment Routing MPLS & SRv6
- PCEP, BGP SR-TE Policy, BGP FlowSpec, BGP Link-State
- NETCONF
- BIER
- Routing, MPLS, switching, multicast



OpenFlow

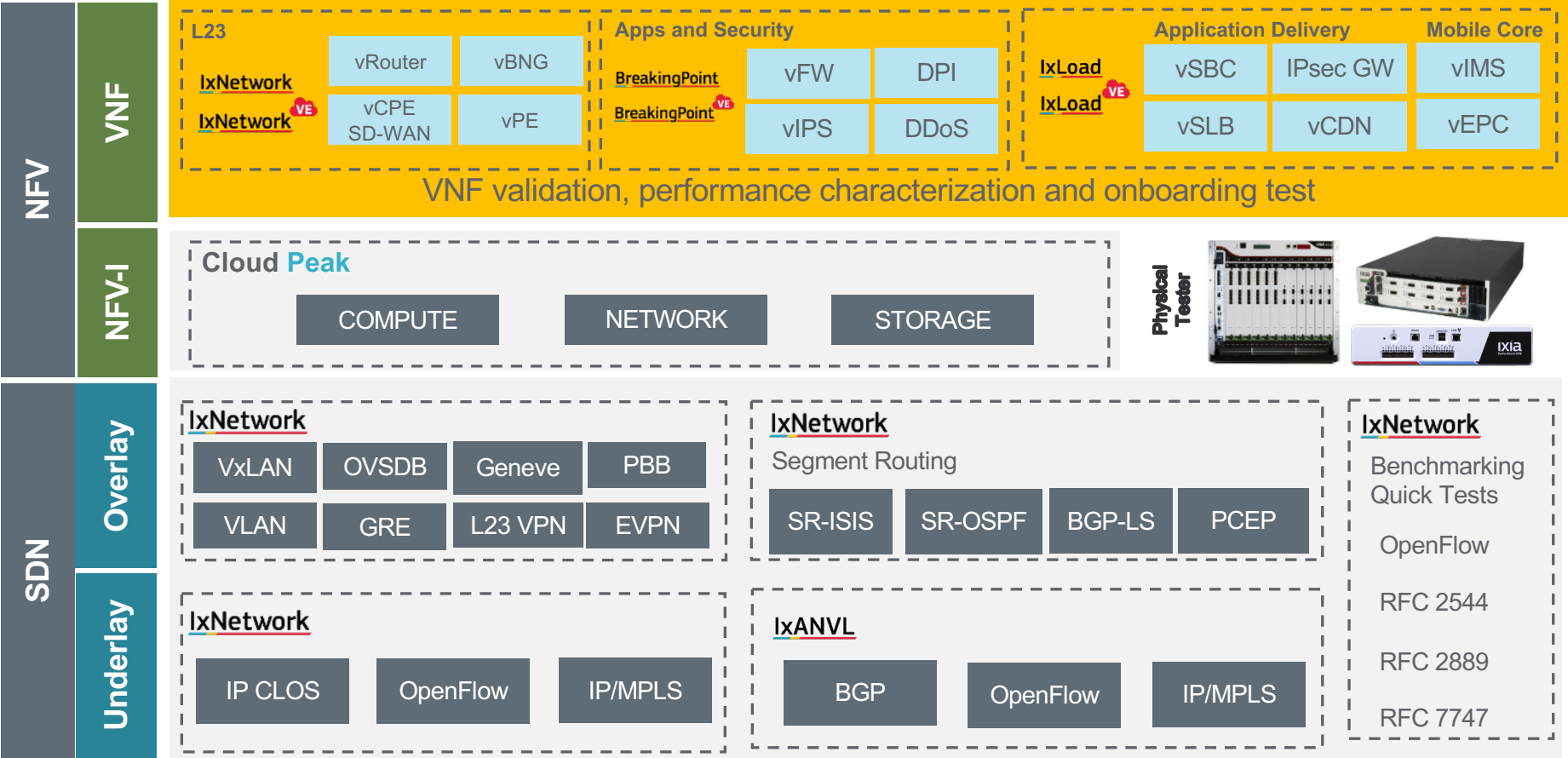
- Controller and Switch emulation
- OpenFlow QuickTest
- ANVL OpenFlow switch conformance test suite



Software Defined Data Center

- Underlay – IP CLOS, ECMP, BGP convergence
- Overlay – VXLAN, NVGRE, GENEVE
- Provision – EVPN/PBB-EVPN, EVPN VXLAN, OVSDB

#2 ТЕСТИРОВАНИЕ VNF



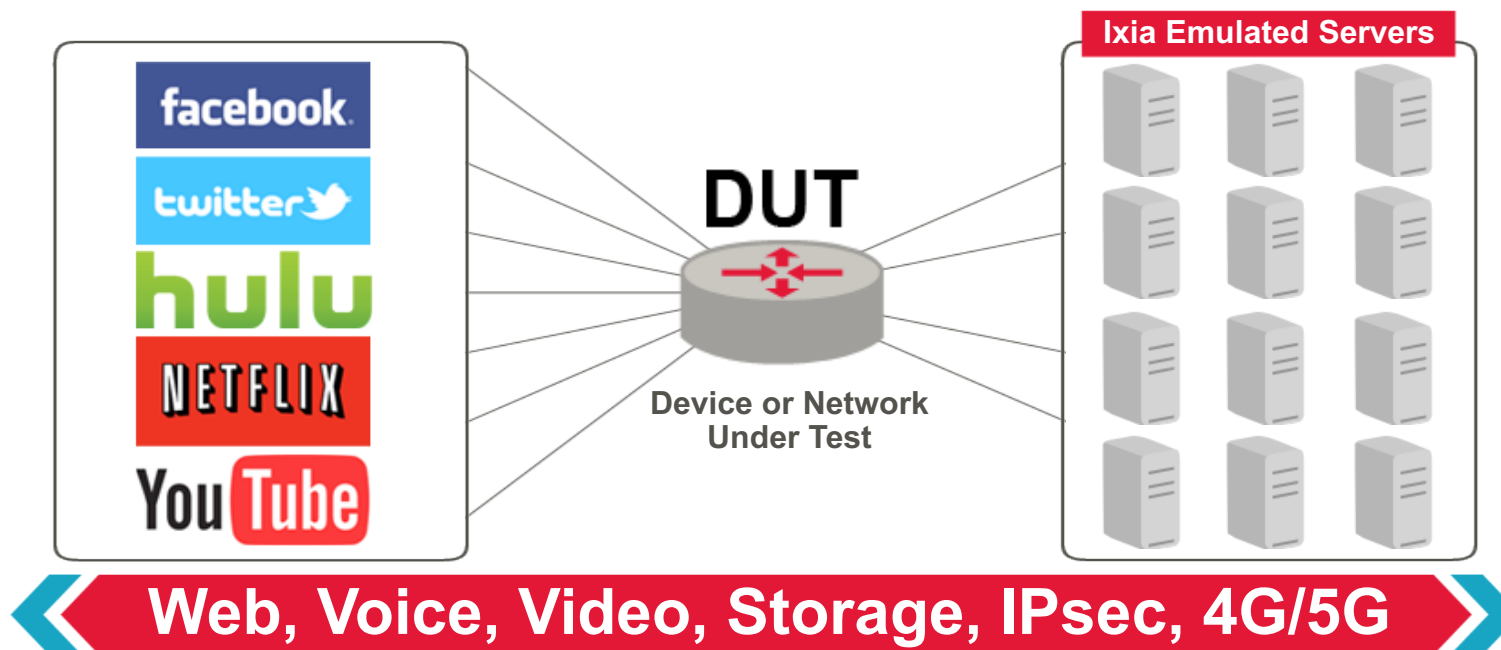
IXIA APIs (REST, PYTHON, TCL)

Lab-as-a-Service (LaaS)

IXIA'S PROFESSIONAL SERVICES TEAM

IXLOAD

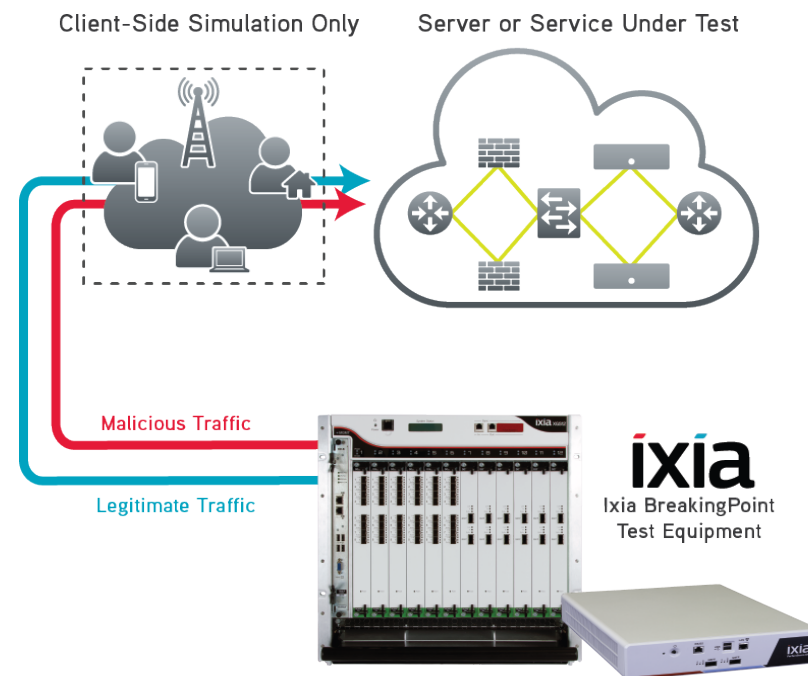
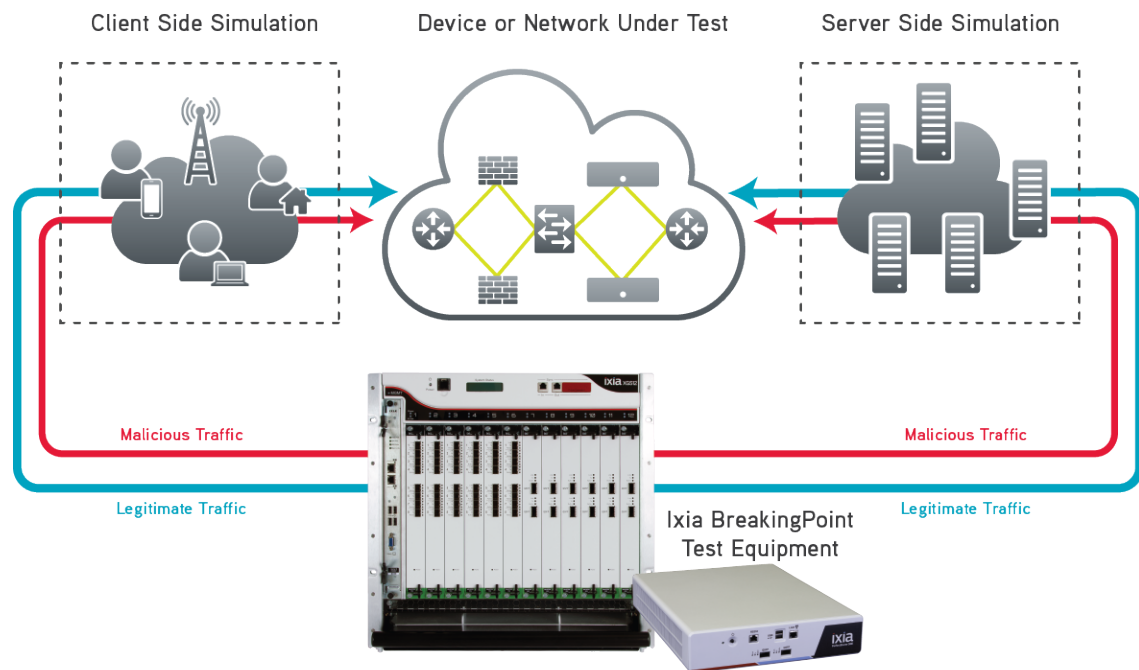
Тестирование на уровне приложений



- ✓ Нагрузочное тестирование с оценкой QoE в реальном времени
- ✓ Сквозное тестирование в физической и виртуальных средах
- ✓ Эмуляции полного стека протоколов – тесты через прокси, NAT и др
- ✓ Генерация большого числа клиентов на реальный сервис
- ✓ Эмуляция динамического поведения пользователей

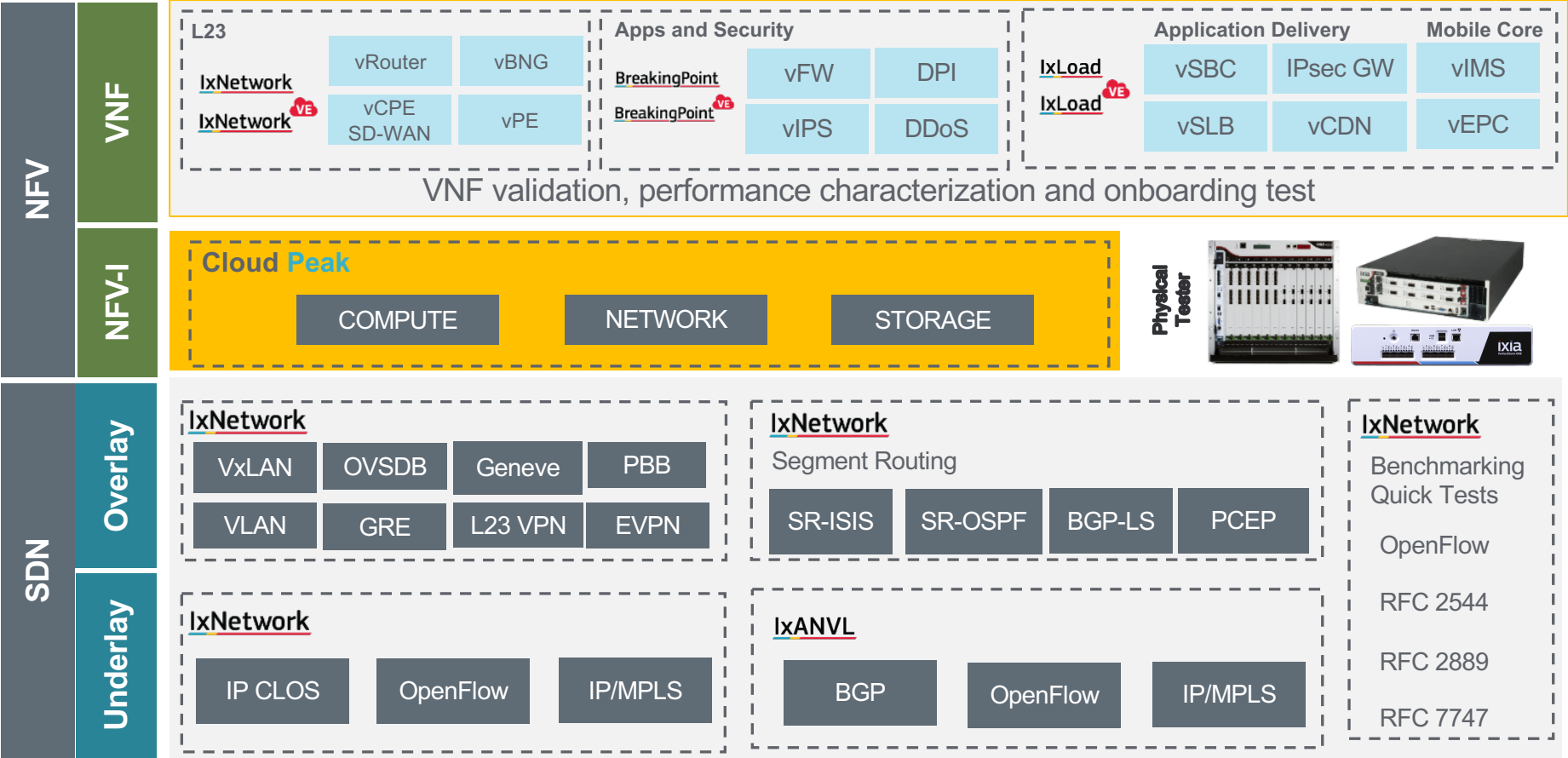
BREAKINGPOINT

Тестирование устройств сетевой защиты



- ✓ Реальный легитимный трафик + атаки: вирусы, DDoS, трояны, botnet, malware
- ✓ Регулярные обновления БД приложений и атак
- ✓ Уникальное содержание и идентификаторы в каждой сессии
- ✓ Высокая производительность с аппаратным ускорением SSL/TLS
- ✓ Выяснение реальной производительности и эффективности vs цена

#3 ТЕСТИРОВАНИЕ NFV-I



IXIA APIs (REST, PYTHON, TCL)

Lab-as-a-Service (LaaS)

IXIA'S PROFESSIONAL SERVICES TEAM

CloudPeak

NFVI PERFORMANCE AND CAPACITY BENCHMARKING

identify bottlenecks

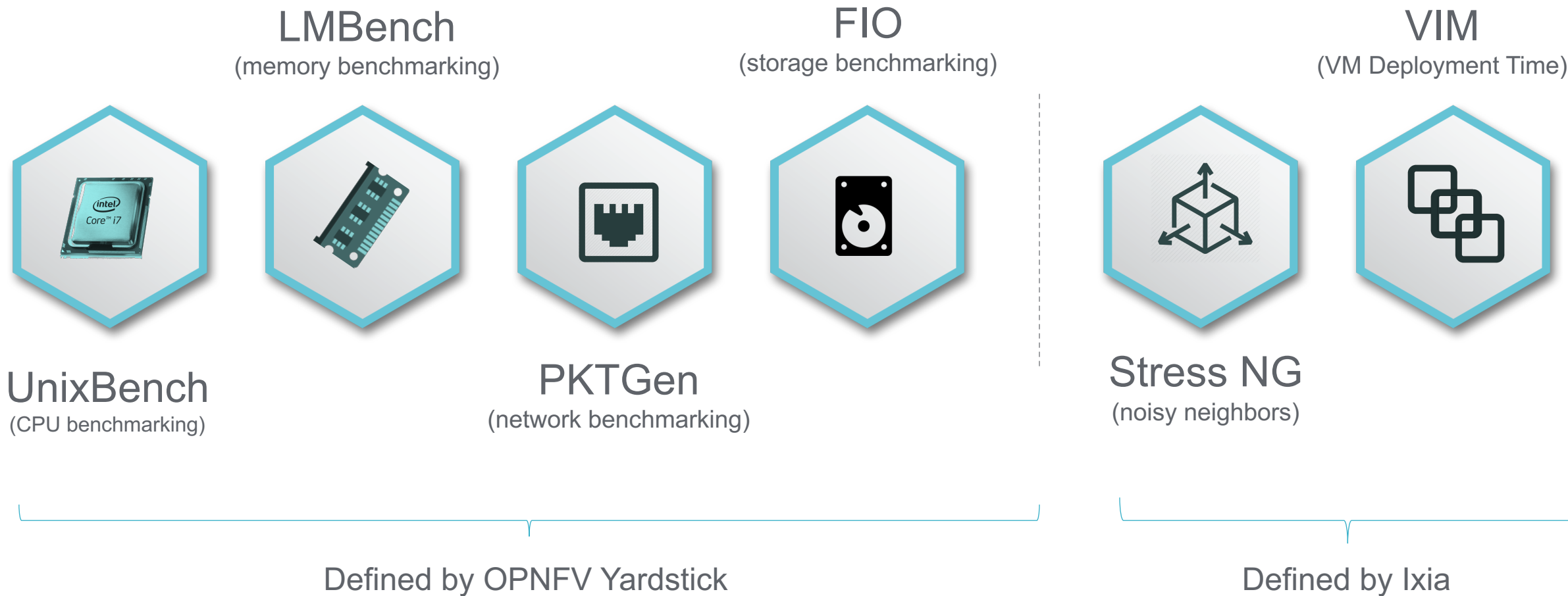
compare infrastructures

optimize configurations

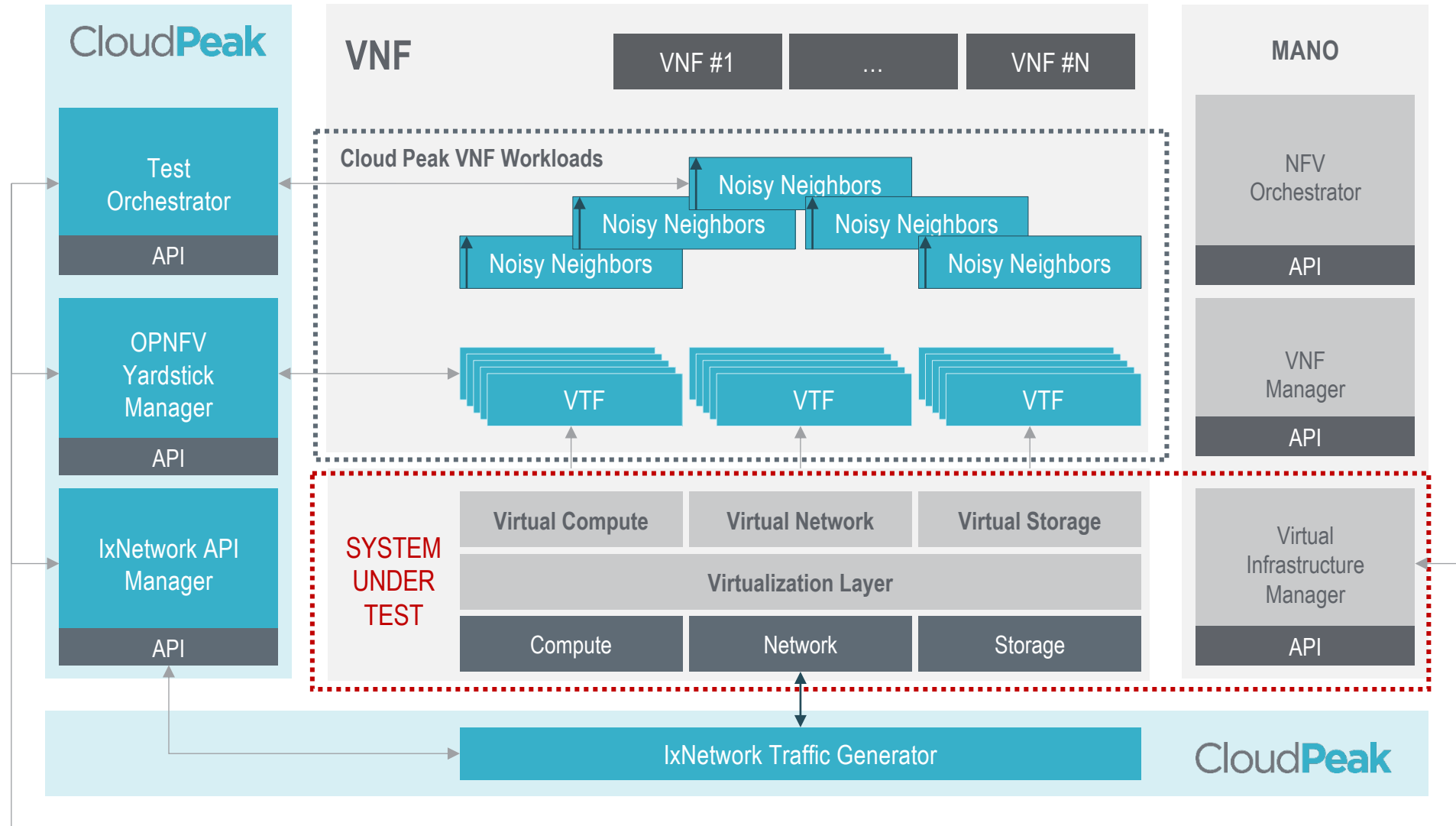


БИБЛИОТЕКА ГОТОВЫХ ТЕСТОВ

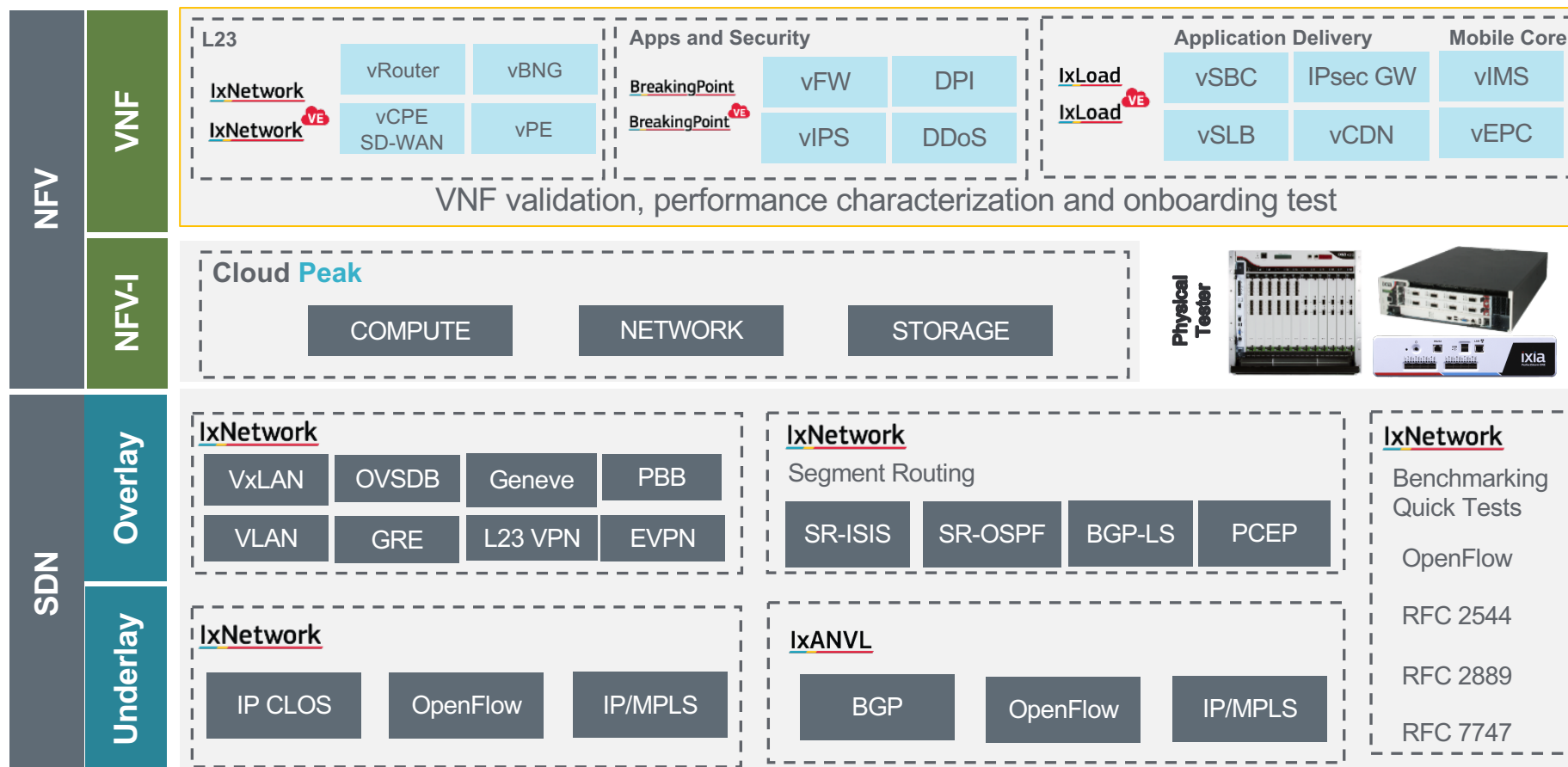
Сочетание доверенного community инструментария и экспертизы IXIA



CLOUD **PEAK** SOLUTION ARCHITECTURE



#4 АВТОМАТИЗАЦИЯ ТЕСТИРОВАНИЯ



IXIA API's (REST, PYTHON, TCL)

Lab-as-a-Service (LaaS)

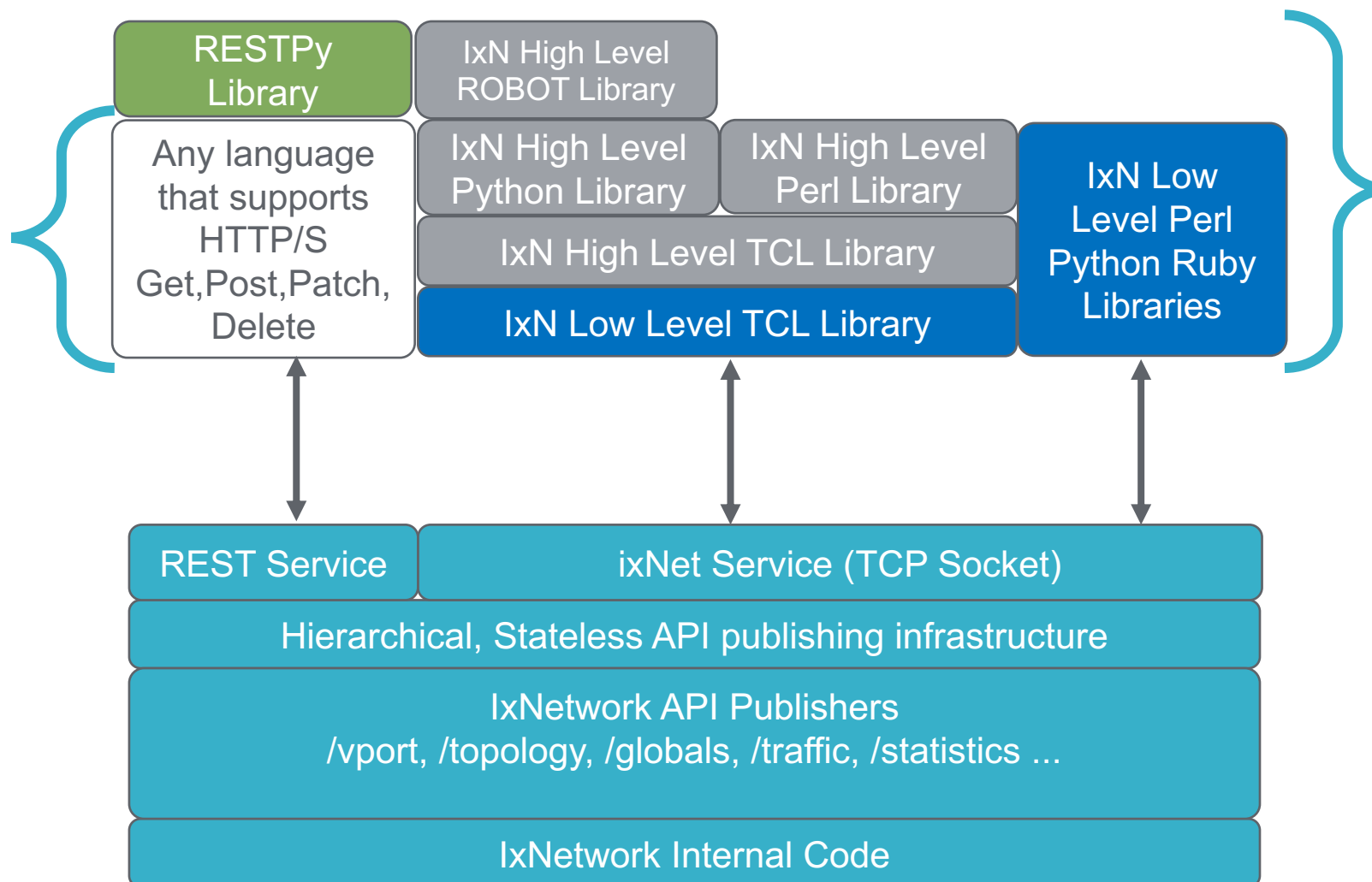
IXIA'S PROFESSIONAL SERVICES TEAM

IXNETWORK AUTOMATION

REST API - Современный поход к автоматизации

Client Independence

- Fewer environment updates
- Faster programming & debugging
- Less to install on the client



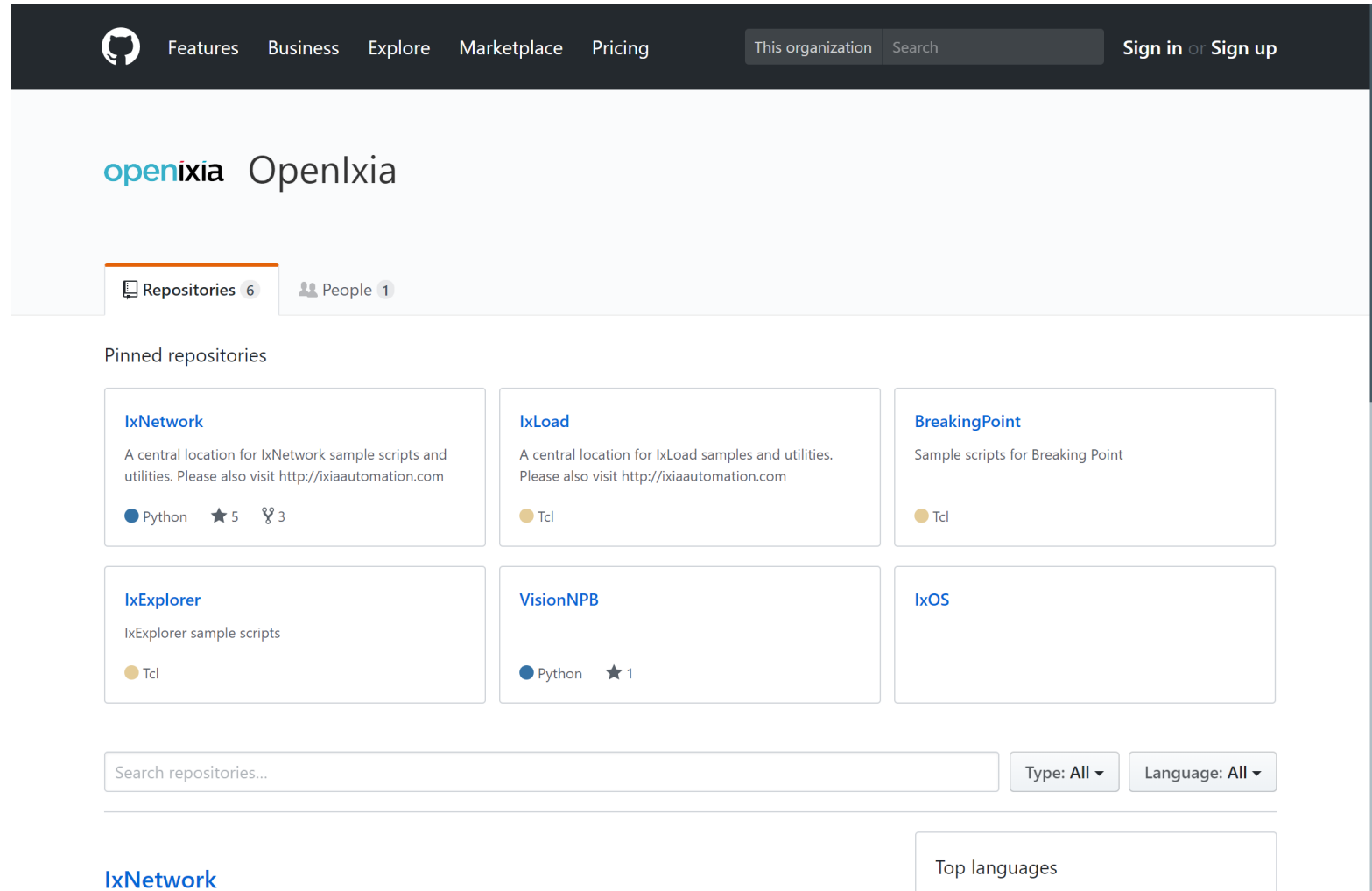
Client Dependencies

- Programming Language Versions
 - ❖ Tcl 7.5, 8.0, 8.4
 - ❖ Python 2.x, 3.x
- IxNetwork Versions
 - ❖ 6.x 7.x, 8.x



openixia GITHUB

- Community based
 - Anyone can take or contribute
- Central repository of samples
 - Scripts
 - Libraries
 - Programming techniques
- Multiple languages
 - Tcl, Python, Perl, Robot, REST
- Multiple products
 - IxNetwork, IxLoad
- GitHub based
 - <http://github.com/openixia>
 - Wiki pages for easy navigation



The screenshot shows the GitHub profile page for the organization 'openixia'. The header includes navigation links: Features, Business, Explore, Marketplace, Pricing, and a search bar. Below the header, the organization name 'openixia OpenIxia' is displayed. A tab bar shows 'Repositories 6' and 'People 1'. The 'Pinned repositories' section contains six cards: 'IxNetwork' (Python, 5 stars, 3 forks), 'IxLoad' (Tcl), 'BreakingPoint' (Tcl), 'IxExplorer' (Tcl), 'VisionNPB' (Python, 1 star), and 'IxOS'. At the bottom, there is a search bar for repositories and a section for 'Top languages'.

openixia OpenIxia

Repositories 6 People 1

Pinned repositories

- IxNetwork**
A central location for IxNetwork sample scripts and utilities. Please also visit <http://ixiaautomation.com>
Python ★ 5 🍴 3
- IxLoad**
A central location for IxLoad samples and utilities. Please also visit <http://ixiaautomation.com>
Tcl
- BreakingPoint**
Sample scripts for Breaking Point
Tcl
- IxExplorer**
IxExplorer sample scripts
Tcl
- VisionNPB**
Python ★ 1
- IxOS**

Search repositories... Type: All Language: All

IxNetwork

Top languages

openixia RESTPy

Python wrapper using REST API

- Object oriented
- Fully aligned with the object tree
- Pythonic style programming
- Programmable debugging levels
- Fully documented
- Available from openIxia GIT or PIP

IxNetwork Python Client ixnetwork_restpy

Package Overview | Samples | API Reference

What is the IxNetwork Python Client?

IxNetwork Python Client ixnetwork_restpy

Package Overview | Samples | API Reference

ixnetwork_restpy · TestPlatform · Sessions · Ixnetwork · Topology

Search

Methods

- Topology. [AdjustPortCount\(Arg2\)](#)
- Topology. [FetchAndUpdateConfigFromCloud\(\)](#)
- Topology. [RestartDown\(\)](#)
- Topology. [Start\(\)](#)
- Topology. [Stop\(\)](#)
- Topology. [add\(Name=None, Note=None, Ports=None, Vports=None\)](#)
- Topology. [find\(DescriptiveName=None, Errors=None, Name=None, Note=None, PortCount=None, Ports=None, PortsStateCount=None, Status=None, Vports=None\)](#)
- Topology. [next\(\)](#)
- Topology. [read\(href\)](#)
- Topology. [refresh\(\)](#)
- Topology. [remove\(\)](#)

Topology.add(Name=None, Note=None, Ports=None, Vports=None)

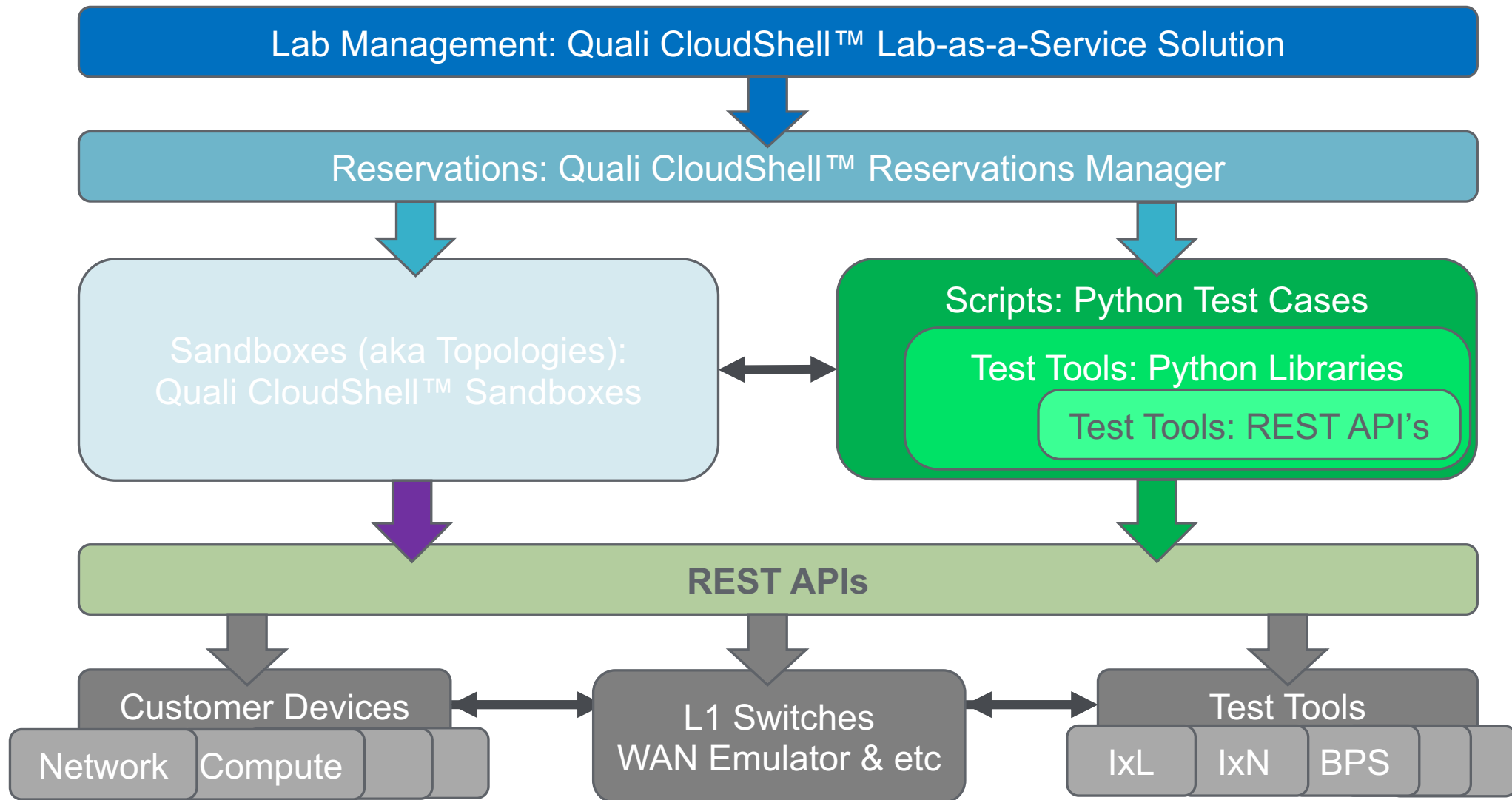
Description	Adds a new topology node on the server and retrieves it in this instance.
Args	Name (str): Name of NGPF element, guaranteed to be unique in Scenario Note (str): Any Note about the Topology Ports (list(str[None]/api/v1/sessions/1/ixnetwork/lag/api/v1/sessions/1/ixnetwork/vport)): Logical port information. Vports (list(str[None]/api/v1/sessions/1/ixnetwork/vport)): Virtual port information.
Returns	self: This instance with all currently retrieved topology data using find and the newly added topology data available through an iterator or index
Raises	ServerError: The server has encountered an uncategorized error condition

ixnetwork_restpy.tests.assign_ports.py

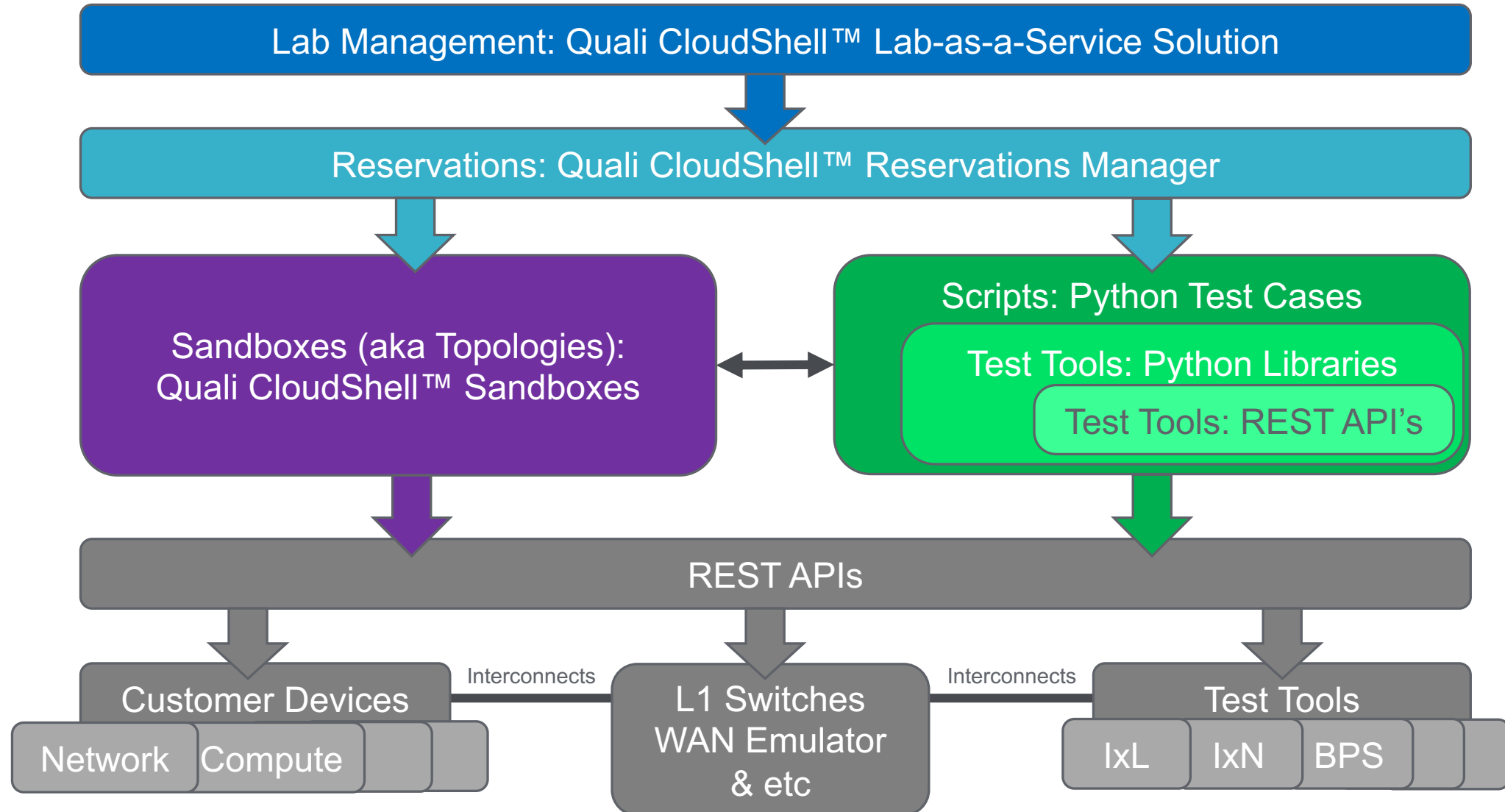
Object Oriented

of Arg1 test ports

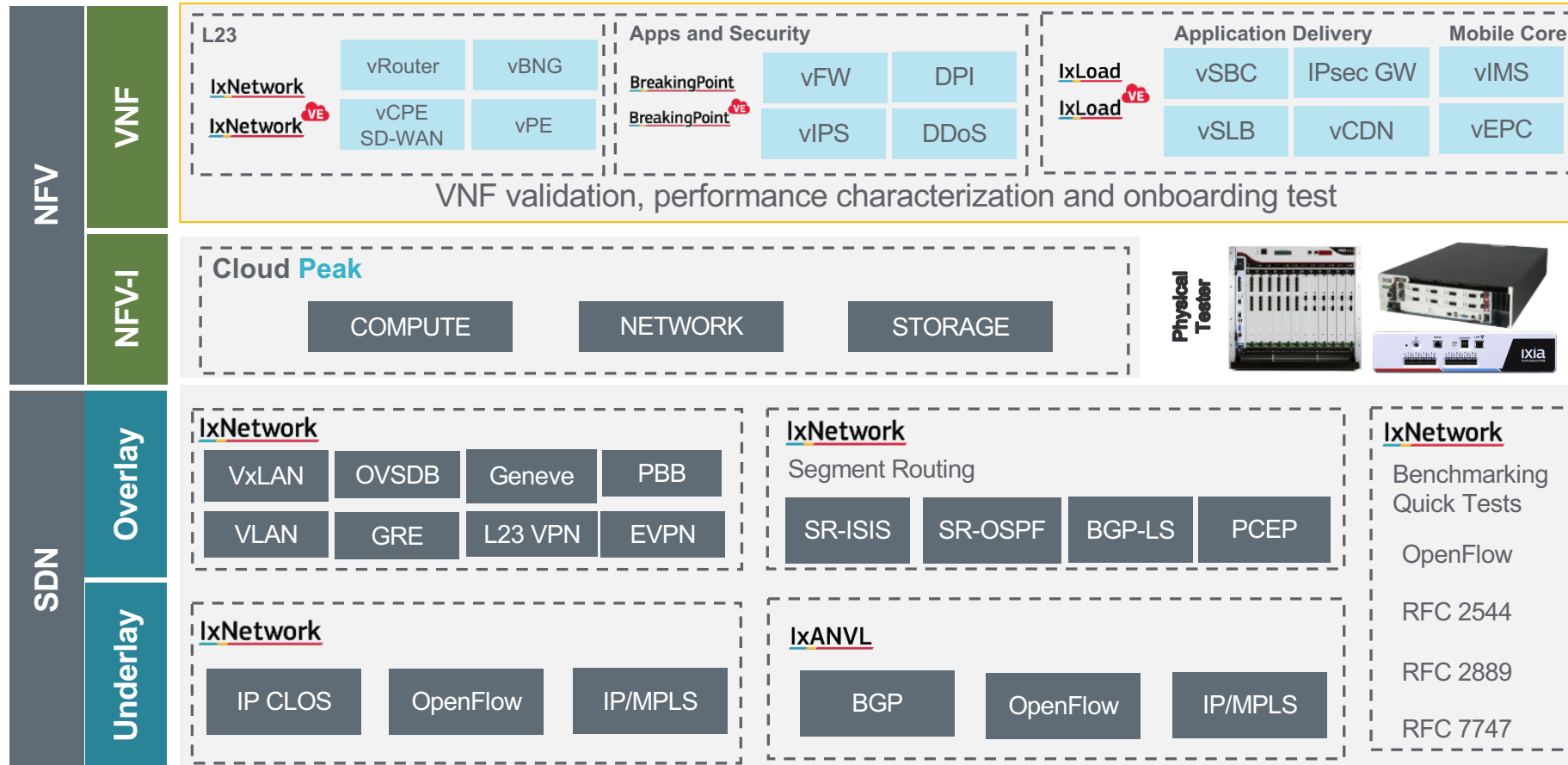
IXIA AUTOMATION FRAMEWORK



IXIA AUTOMATION FRAMEWORK



#5 LAB-AS-A-SERVICE



IXIA APIs (REST, PYTHON, TCL)

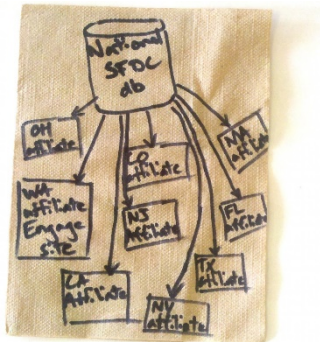
Lab-as-a-Service (LaaS)

IXIA'S PROFESSIONAL SERVICES TEAM

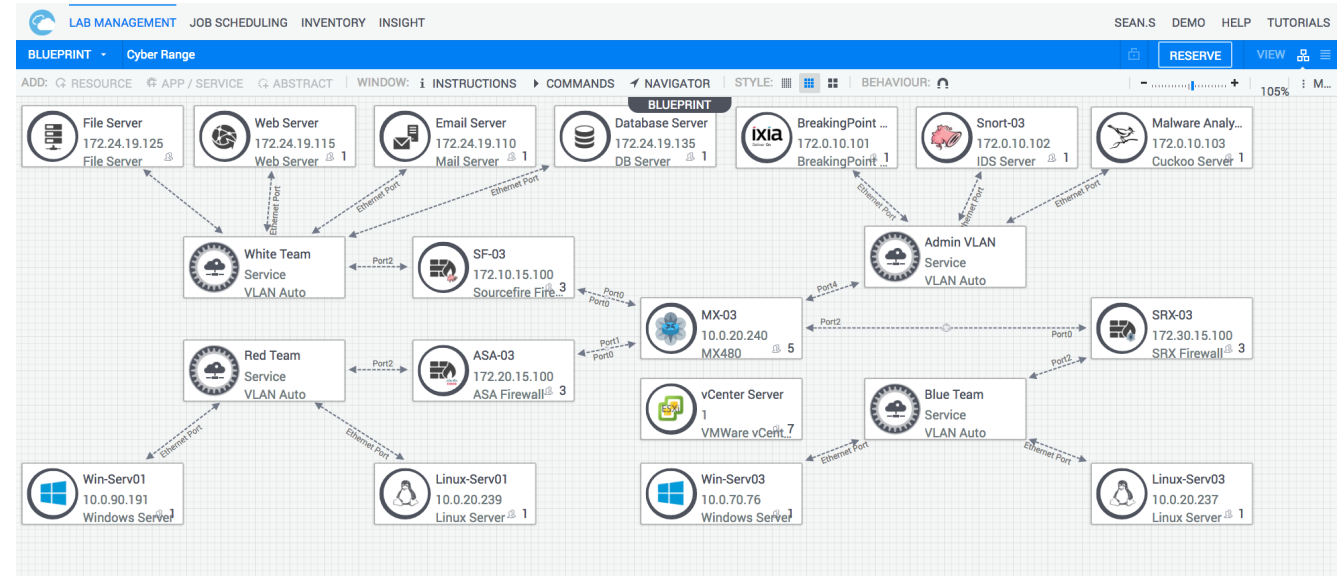
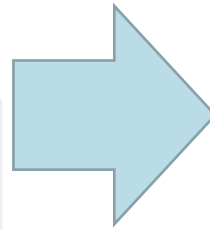
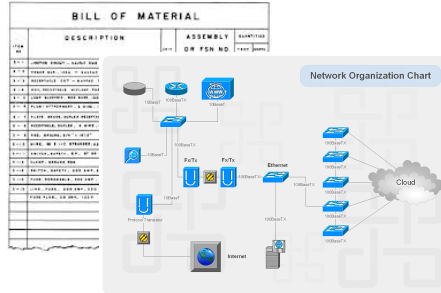
МОДЕЛИРОВАНИЕ СТЕНДА

Blueprint – шаблоны тестового окружения и описание связей элементов

- Visual drag and drop directly from inventory
- Abstract complexity
- Set connectivity based on infrastructure
- Save to Blueprint for reuse
- Physical, Virtual, Cloud, Apps
- Model is “Automation Ready”



+



Model across public, private and hybrid cloud environments

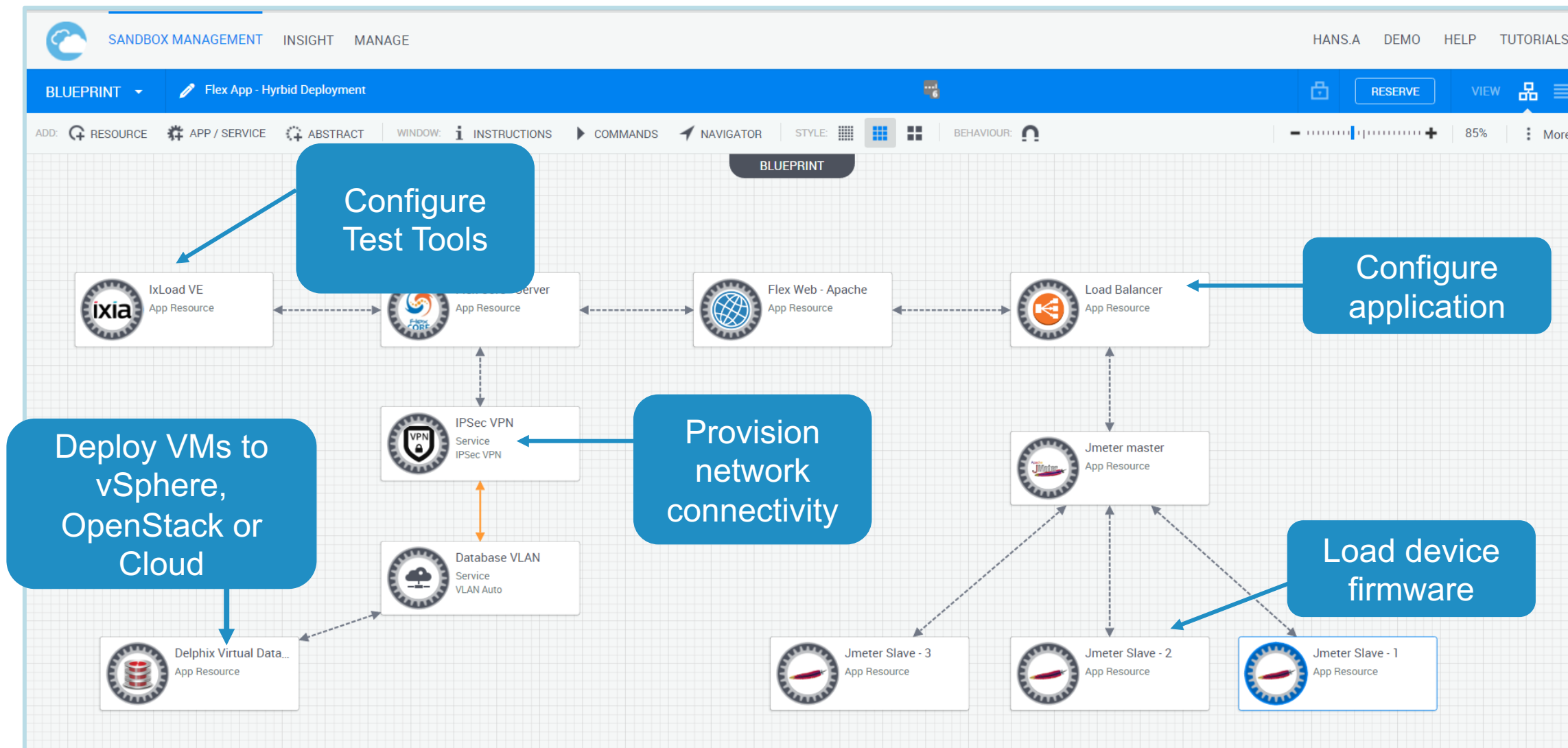
ПУБЛИКАЦИЯ И ОБМЕН ШАБЛОНАМИ

Cisco DevNet Labs

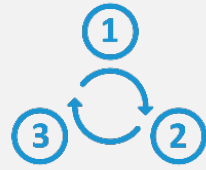
- Publish Blueprints
- Save environment as Blueprint, publish for others to use
- Standardize test beds and environments as Blueprints for consistent results
- Self-service access to IT assets using Blueprints
- Define how blueprints are consumed by end users
- Forms and inputs
- User access, categories and domains

The screenshot displays the Cisco DevNet Labs interface. At the top, the navigation bar includes the Cisco DevNet logo, a 'LAB MANAGEMENT' tab, and user links for SSTEPHENSON1, DEVNET, HELP, and TUTORIALS. Below the navigation bar, the main content area is titled 'All Sandbox Labs (41)'. It features a grid of lab cards, each representing a different environment. The cards are color-coded and include version information, a lab name, a description, and a 'RESER...' button. The labs are organized into three rows. The first row includes 'ACI Hardware Lab', 'ACI Simulator', and three 'APIC-EM' labs. The second row includes four 'APIC-EM' labs and one 'Cisco Information Server' lab. The third row includes five labs related to 'Collaboration Endpoint' and 'Cisco UC Manager'. A sidebar on the right, titled 'BROWSE BY CATEGORY', lists various categories: Networking, Collaboration, Cloud, IoT, Data Center, Security, and Analytics and Automat... Each category is represented by a small icon. At the bottom right of the sidebar, there is a 'Back to top' link.

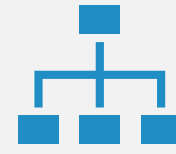
РЕЗЕРВИРОВАНИЕ И РАЗВОРАЧИВАНИЕ СТЕНДА



USE CASES



Lab
Automation



Networking
and IoT



Continuous
Testing



DevOps
Automation –
CI/CD



Training/
Education/
PoC



Customer
Support



Developer
communities



Private/Public/
Hybrid Cloud



SDN/NFV



Certification /
Compliance

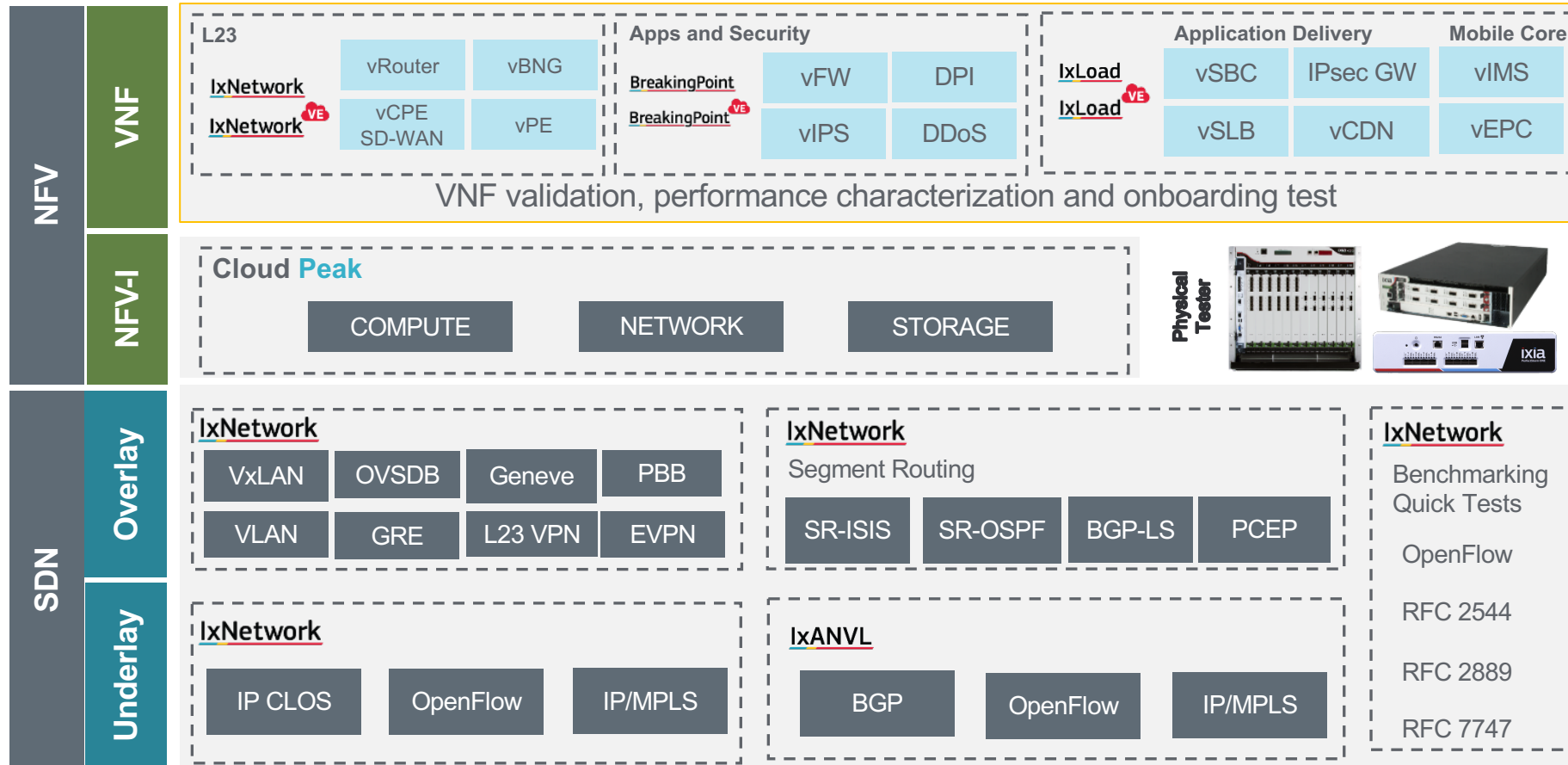


Cyber Ranges



App
Modernization

#6 TESTING AS A SERVICE (TAAS)



IXIA APIs (REST, PYTHON, TCL)

Lab-as-a-Service (LaaS)

IXIA'S PROFESSIONAL SERVICES TEAM

ЧТО ТАКОЕ TAAS?

Сервис по тестированию с готовыми и наиболее популярными методологиями

FIREWALL

Firewall Efficacy and Performance Test Services

Every well-meaning organization strives to achieve higher security while having minimum impact to their regular business. Unfortunately, any device or function intending to provide added security will almost certainly add delays and impact device and overall network performance if not engineered properly.

By testing different operational modes of your next-generation firewall (NGFW), you can optimize configurations and maximize security effectiveness.

Delivers testing required for:

- Vendor bake-offs
- Network topology changes/upgrades
- Firmware updates
- Configuration changes
- Network security audits



Firewall Test Package - Basic

This basic package is recommended for companies getting started with evaluating their NGFW device. As part of this program, the device under test (DUT) will be configured for different scenarios (firewall only, application ID, IPS/IDS) and comprehensively evaluated in the following areas:

- Layer 4 performance: TCP connection rate, TCP concurrent connections, UDP throughput
- Layer 7 performance: HTTP/HTTPS connection rate, HTTP/HTTPS concurrent connections, HTTP/HTTPS throughput, application mix performance
- Latency
- Application filtering

Firewall Test Package - Advanced

The advanced package includes the test cases from the basic package plus the following:

- Vulnerability protection: Security strikes/malware only, both security strikes/malware and legitimate traffic
- Stability: Fuzzing
- Forwarding Parsing

Ordering Information

972-6900 (3-day basic package); 972-6950 (5-day advanced package)

Delivery

Detailed test report with interpretation consultation

Every package has:

- **Pre-defined SoW** (based on SoW templates)
- **Pre-defined Test Plan**
- **Testing Hardware/Software** for the duration of the engagement (with certain performance numbers)
- **Professional Services Engineer** assistance for the duration of the project
- **Project reporting**

ТЕКУЩЕЕ ПРЕДЛОЖЕНИЕ ПО TAAS

<https://www.ixiacom.com/resources/test-service-taas>



Professional Services
Test as a Service (TaaS)



Application and Security Testing.....	6
Firewall Efficacy and Performance Test Services	7
IPS/IDS/DLP Test Services	8
DDoS Test Services	9
SSL/TLS Offload Test Services	11
SD-WAN Test Services	12
IPsec VPN Test Services	13
SLB Test Services	14
Email Gateway Test Services	15
Application Delivery Test Services	16
UC/SBC Testing Services	18
5G/LTE Testing	19
Virtual EPC SGW/PGW Testing Services	20
Schedule Professional Services Testing Today!.....	22



Внедряйте новые технологии с нами!
Все решения доступны для демонстрации

