

# Keysight Managed Solutions

Test Lab Modernization for Financial Enterprises

# Common Challenges in Financial Enterprise Test Labs

In widespread discussions with enterprises about their test labs, we've heard several common themes relating to their challenges. Examples include:

- Multiple labs/environments are segregated by technology and/or vendor
- Siloed labs/environments reside both on customer premises and vendor facilities
- Vendors are paid annually for a pool of resources to provide testing services (best effort testing)
- Typical lab setup time can be weeks, requiring multiple lab techs
- Some labs are static to minimize setup efforts, but constrain flexibility
- Lab testing runs are several months each, with manual report generation
- No integration testing is performed (cross-environment); issues are being found in production that were not tested in the lab due to silos
- No integration testing increases production incident risk and costs
- Minimal impairment testing done, and none in an integrated environment
- New features typically take 9-12 months to build test plans and perform test execution
- Redundancies and duplication exist with multiple tools and processes

## Highlights

- **Lab automation.** Build and integrate key automation capabilities from the start
- **Test automation.** Agile iTest development to capture, design, develop, and automate manual test cases
- **Physical design.** Inventory, architecture design, pre-commissioning, configuration, installation, and validation of network infrastructure connectivity
- **Network.** Integration of all L1/L2/L3 devices, fabric architecture design, configuration, installation, and validation

# What Test Lab Solution Can Address These Challenges?

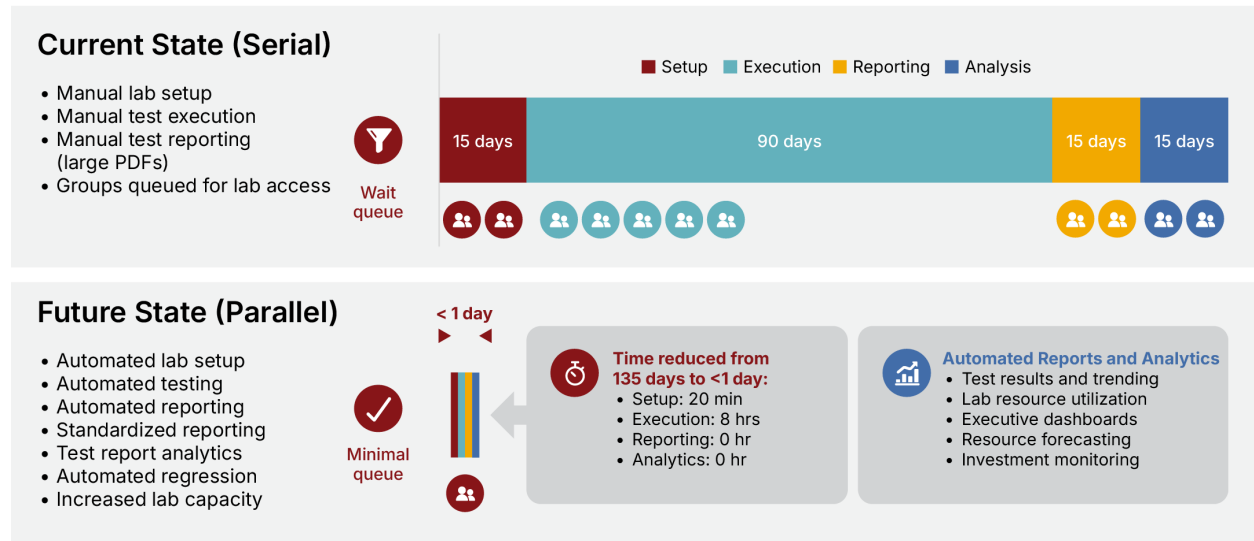


Figure 1. Sample current state test lab (top) and future state (bottom)

## Identifying Unique Requirements: Test Lab Modernization for Financial Enterprises

Like most Keysight customers, financial enterprises are being pushed to test much more complex systems faster than ever before, while trying to reduce costs and carbon footprint. On top of that, however, they all face multiple regulatory compliance requirements, many that must be fulfilled multiple times per year. For many, their current state of testing simply can't keep up. Timely compliance is one requirement they face. Others include consumer duty, data integrity, and security assurance.

### Lab and Test Modernization Drivers

Compliance	Savings	Productivity	Collaboration
<ul style="list-style-type: none"> <li>In code compliance</li> <li>Reduced incidents</li> <li>Regulatory certification</li> </ul>	<ul style="list-style-type: none"> <li>Lab setup &amp; test savings</li> <li>ROI analysis</li> <li>12–24 month payback</li> </ul>	<ul style="list-style-type: none"> <li>Up to 90x productivity gain</li> <li>Weeks to hours tasks</li> <li>Fast feature testing</li> </ul>	<ul style="list-style-type: none"> <li>Cross dept &amp; integration testing</li> <li>24x7x365 access</li> <li>Global access</li> </ul>

**Automated infrastructure as code (IaC) and CI/CD/CT testing platform**

## Regulatory Compliance Drivers



### Timely compliance

- Keep pace with new regulatory and technology requirements, often multiple times per year
- Provide technology and expertise to deliver rapid, comprehensive, and cost-effective testing
- Ensure in-code compliance to minimize incidents and fortify SLAs



### Consumer duty

- Account for customer accessibility, needs, and demands
- Foster interaction channels (i.e., socio-economic status, geography, special needs, satisfaction, etc.)



### Data integrity

- Confirm SLAs are achievable in the lab under real-world loads
- Identify application weaknesses and foster improvements for high performance during periods of high latency



### Security assurance

- Fortify controls over the use of data; ensure equivalency of PII data and monetary value
- Mitigate risk by identifying vulnerabilities and suggesting code level remediation
- Ensure SWIFT network architecture and web applications facilitate access and enforce procedures for transfers

## The Solution: Test Lab Modernization for Financial Enterprises

Keysight's Test Lab Modernization for Enterprises solution abstracts physical, virtual, and hybrid lab resources (that may be geographically dispersed) with systems and processes to provide a "Virtual Lab" for each test team. Through their solution interface, via Keysight Velocity, each test team reserves lab resources, builds templates to define required test topologies, and triggers the fully automated build of any test topology. Teams have their own lab in a designated timeslot which can be rapidly reconfigured at will. The interface also provides a centralized development environment. This allows test teams to build automated test suites, and the controls to execute them, with results populated into a centralized reporting engine that tracks testing progress against their plan. Diverse global test teams from different organizations possess a comprehensive platform to automate the testing in their CI/CD process that is fully compatible with in-house or third-party automation tools. The solution includes Keysight's Velocity iTest, considered by many experts to be the industry's most powerful platform for test campaign and automation development.

# Lab and Test Automation Capabilities



## Lab automation

- Agile development to build and integrate key automation capabilities
- Leverages Velocity lab automation product and network services methodology
- Automation from Day 1, with transformation of manual processes



## Test automation

- Agile iTest development to design, develop, and automate manual test cases
- Automate tests starting on Day 1, with intelligent test capture and replay
- Leverage iTest to abstract complexities and support a wide variety of APIs



## Physical design

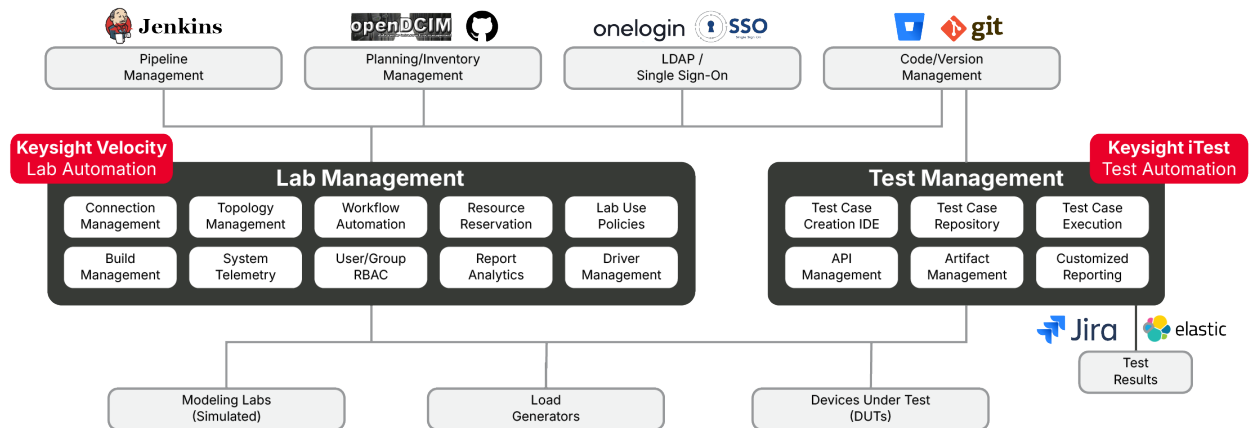
- Complete inventory of labs and import into corporate DCIM (inventory)
- Design rack elevations for network infrastructure
- Switching fabric pre-commissioning, provisioning, and testing, driven with Velocity
- Installation, turn up, configuration, and validation of network infrastructure connectivity



## Network

- Transparent L1 and L2 dynamic end point connectivity in Velocity
- Architecture, design, configuration, integration, and validation of all L1/L2/L3 services driven through Velocity
- Velocity automated end-to-end connectivity between a wide variety of ports/bandwidths
- Fabric architecture design, configuration, installation, and validation

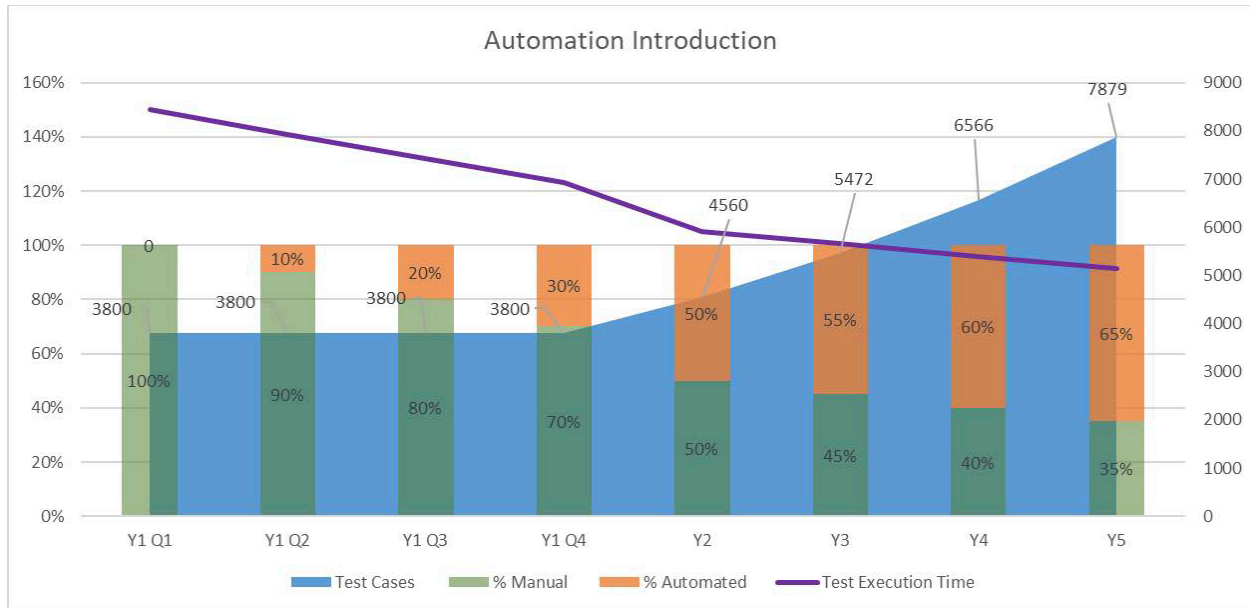
# Lab and Test Automation Capabilities



## Lab and Test Automation Solution Value

Savings area	Value
Test automation / test execution	<ul style="list-style-type: none"> <li>• Minimize testing duration times with automation</li> <li>• Minimize manual testing costs and fallout</li> <li>• Increase ability for continuous regression testing</li> </ul>
Lab automation	<ul style="list-style-type: none"> <li>• Minimize lab setup times</li> <li>• Minimize manual lab setup tasks</li> </ul>
Lab queue wait time	<ul style="list-style-type: none"> <li>• Reduce bottlenecks to testing and idle testing periods</li> <li>• Minimize contention between testing groups and increase productivity</li> </ul>
Lab capacity	<ul style="list-style-type: none"> <li>• Increase lab capacity to support additional test execution runs through rapid lab setup and tear down; support for additional testing teams/groups</li> </ul>
Outages and breaches	<ul style="list-style-type: none"> <li>• Minimize outages and security breaches through increased test coverage, increased testing cadence, and rapid new test case creation</li> </ul>
New feature testing / time to market	<ul style="list-style-type: none"> <li>• Significantly reduce time to market for new feature lab setup/testing</li> <li>• Simplify new test case development with automation tools</li> <li>• Automated regression to ensure no impacts with existing features</li> </ul>
Lab power conservation	<ul style="list-style-type: none"> <li>• Intelligently power-off lab components not in use supporting sustainability and budgetary goals</li> </ul>
Integration and impairment testing	<ul style="list-style-type: none"> <li>• Support cross-environment integration testing to minimize production outages</li> <li>• Support rainy day impairment testing to test network resiliency/recovery</li> </ul>
DUT and test equipment costs	<ul style="list-style-type: none"> <li>• Leverage under-utilized equipment to fuller capacity to realize cost savings</li> <li>• Minimize new equipment spend to maximize usage capacity of existing equipment</li> </ul>

## Automation Outcomes – Case Study



- **50% of tests will be automated** by end of Y2 achieving 65% by Y5
- **40% improvement in average test duration** (including manual execution)
- Test throughput gradually **doubled by Y5**
- Time to market **improved 40-80%** depending on % of tests automated
- **35% of tests remain manual** as certain test cannot be automated (e.g., electrical)
- Test automation and process enhancement **reduces Ops faults transferred by 70%**

## Why Keysight?

As a world leader in testing and test automation, we have built out lab and test automation solutions in some of the largest organizations in the world. Our solution is built on a foundation of our leading product portfolio and is customizable based on the existing systems, processes, and requirements that are deployed in your labs. It is suitable for cutting-edge technologies in networking, cybersecurity, and positioning, including 5G, 5G Core, Cloud, SD-WAN, SDN, NFV, EVPN, Wi-Fi 6, and more. The offer is part of a broader portfolio of solutions that aim not just to automate the lab, but to be part of an end-to-end DevOps, CI/CD process to drive continuous innovation with continuous testing (CT) in your network... from lab to live.

## Business Value:

- Accelerate time to market via streamlined test cycles (75% reductions achieved)
- Realize optimized tool and human resource management with efficient utilization of lab resources
- Reduce capex with efficient sharing, device utilization, and full automation of common functions (up to 75% reduction)
- Lower opex associated with electricity and cooling using Power Distribution Unit (up to 20% reduction)
- Optimize testing with automation, consistency, and repeatability and increase agility and scalability
- Improve quality through broader test coverage and rapid issue isolation, while enabling next-gen technology trials and roll outs
- Leverage experts with specialized knowledge from day one to increase productivity

## Requirements for Enterprise Test Lab Modernization Success

Enterprise customers need lab and test automation partners who:

- Have the deep expertise to deliver world-class test coverage
- Are industry experts at lab and test automation
- Are working extensively with all leading technology vendors, but remain neutral
- Ensure a running start with broad technology and domain expertise and a comprehensive portfolio of testing technology
- Fit into CI/CD/CT with continuous and independent evolution of all leading technologies

# The Global Services Delivery Process



**Discover:** Gather requirements; perform gap analysis

**Define:** Identify solutions that scale seamlessly to integrate flexibly with disparate systems; present roadmap; illustrate ROI

**Develop:** Create next-gen end-to-end solutions driven by our technology and service portfolio

**Deliver:** Manage projects; ensure outcomes are measurable, tracked by KPIs, and improved over time

**Debrief:** Ensure customer requirements and expectations have been met

## Our Customers

Keysight has been a pioneer since the advent of network, wireless, and GNSS testing, validation, and assurance, and has provided services to customers across a broad range of global industries. These varied business sectors include global navigation satellite systems, aircraft and automotive manufacturers, as well as telecommunications and wireless service providers, network equipment manufacturers, petroleum, education, the media, financial institutions and stock exchanges, technology enterprises, and publishing giants. Keysight also services governments worldwide, which includes military and space agency projects.

# Keysight Expertise

Keysight provides services expertise for all major communications vendors — **from Lab to Live**. This end-to-end proficiency draws from a deep bench of seasoned professionals who are qualified experts in our technology portfolio. Our services cover devices, infrastructure, cloud infrastructure, networks, network applications, security, and assurance, all powered by state-of-the-art lab and test automation. Such industry expertise maximizes your solution capabilities and ensures you deliver your product or service to market on time and with optimal quality.

## Keysight Services Portfolio

Keysight Managed Solution's Test Lab Modernization for Enterprises solution is a comprehensive suite of services and solutions. Keysight's portfolio of services for an initiative's entire lifecycle — **from Lab to Live** — helps organizations achieve their short-term testing and validation goals, while building a strong framework for future and enduring business success.



### Managed solutions

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Performing strategic operational functions for customers:

- Lab as a service
- Test as a service
- Certification as a service
- Deployment as a service
- SecurityLabs



### Professional services

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Providing a broad range of test and validation services enabling Keysight products and solutions that involves:

- Implementation & integration
- Customer training
- Resident engineers



### Consulting services

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Supporting custom projects, helping customers with specific strategies and objectives:

- Assessments & strategy
- Planning & design
- Network architecture & engineering
- Test methodologies

For more information on Keysight's Managed Solutions, please contact us at <https://www.keysight.com/us/en/contact.html>.

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at [www.keysight.com](http://www.keysight.com).



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