



SPIRENT

SERVICES SOLUTIONS

INFRASTRUCTURE TEST OPTIMIZATION

SPIRENT SERVICES S

FOR INFRASTRUCTURE TEST



SOLUTIONS

OPTIMIZATION (ITO)

The New CHALLENGES OF TESTING

- Next-Generation IP Networks1
- Outdated Testing Strategies & Business Failure Jeopardy.1
- ITO (Infrastructure Test Optimization)1
- The ITO Challenge1

Spirent ITO SOLUTION MODELS

- ITO Solution Models2
- ITO Solution for Manual Testing Teams3
- ITO Solution for Teams With Limited Automation4
- ITO Solution for Development Teams5
- ITO Solution for Teams With Advanced Automation6

How Services Optimize ITO ADOPTION

- ITO Solution for Delivery Model7
- Solution Elements Overview.7
- ITO Solution Components8
- Engineering Services Profile.9
- Testing Services Profile.9
- Spirent ITO Partner and Integration Solutions10

Services CREDENTIALS

- Spirent ITO Case Study11
- Spirent Services Qualifications12
- Spirent Services Expertise12

The New CHALLENGES OF TESTING

- Next-Generation IP Networks
- Outdated Testing Strategies & Business Failure Jeopardy
- ITO (Infrastructure Test Optimization)
- The ITO Challenge

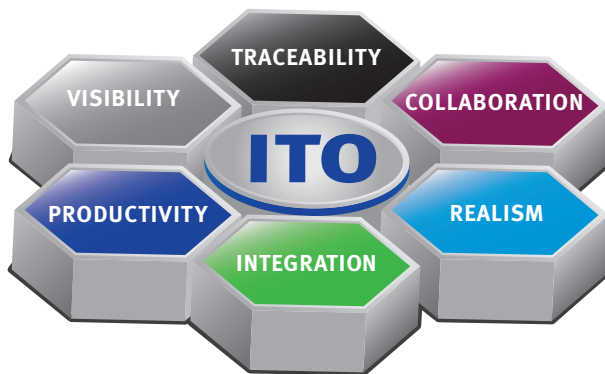
Next-Generation IP Networks

Accelerating Requirements can Erase Competitive Advantages

The always-on, always-connected, always-available universe is expanding at an explosive rate. Regardless of the vertical market, the business value delivered through infrastructure and services is integral to a company's brand promise. With continuous evolution and the convergence of infrastructure with the next-generation IP network (NGN)—meaning one fully-converged network to transport all information and services, and its inherent complexity—a requirement for accelerated test schedules, with more complex test strategies, is a must. Too often, however, qualified resources and know-how are in short supply.

Outdated Testing Strategies & Business Failure Jeopardy

The demand for a holistic and integrated infrastructure test strategy to assure reliable solution quality multiplies over time. Yet, due to limited budgets and resources, some organizations hope to meet these challenges with inadequate staffing, unqualified expertise, homegrown solutions, and outdated strategies. With so much at stake, this manner of approach is high in risk. Inability to respond properly to the evolving requirements of next-generation networks increases the risk of brand damage, productivity and revenue loss, and at the bottom line, potential business failure.



The Benefits of ITO

ITO (Infrastructure Test Optimization)

State-of-the-Art Evolution of Testing

In voke's influential white paper, *Infrastructure Test Optimization*¹, the distinguished analyst firm identified and defined critical guidelines for the standards of test practices—Infrastructure Test Optimization (ITO)—to achieve reliable and effective collaborative testing for infrastructure. ITO identifies the five practices that ensure infrastructures meet a defined quality of service (QoS) and quality of experience (QoE) that are core requirements to meet strategic business objectives.

The five practice areas of ITO are:

- Emulation & Analysis
- Automation
- Development Testing
- Quality Management
- Lifecycle Virtualization

voke's Conclusion

ITO is the 'new normal' in infrastructure testing policy and strategy. The guidelines assure that organizations achieve the optimal customer environment, with optimal quality workflow, test workflow, and lab management. Holistic and seamless testing is the result, with all the efficiencies and advantages incorporated.

The ITO Challenge

Given the complex requirements to deliver ITO's benefits, and the varied differences in customer environments, how do you assure your IT testing automation initiative meets your exacting needs? The answer lies in choosing the right solutions that perform on all levels, shorten time-to-market, while reducing CAPEX and OPEX, as well as leveraging existing investments. Because most organizations don't have the in-house expertise to assure the seamless delivery of this caliber of solution, voke recommends adopting a trusted third-party professional services organization. With an established team of qualified professional services engineers, Spirent is a primary source for all ITO solutions.

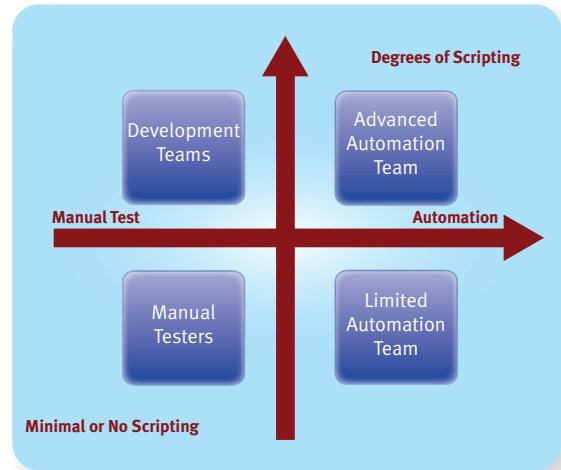
¹ voke Research—Category Snapshot Report: Infrastructure Test Optimization, Theresa Lanowitz, Lisa Dronzek, January 12, 2012

- ITO Solution for Manual Testing Teams
- ITO Solution for Teams With Limited Automation
- ITO Solution for Development Teams
- ITO Solution for Teams With Advanced Automation

ITO Services Solutions

Based on our ongoing experience and seasoned leadership in the market, Spirent has identified four categories of customer challenge in the ITO-space which are based on the demographic of the characteristic testing process environments of each test team. The testing process environment profiles pictured to the right, provide useful high-level models for identifying solution variables which most closely align to the range of challenges and requirements seen in different customer test environments. These category models provide the basis for the ITO Solution Models. They also offer a common reference between Spirent and a customer to help define and validate the critical issues and identify the most suitable ITO solution.

While these models provide a convenient reference for our most common customer sets, Spirent's global customer base spans a broad range of industries and each customer has testing goals and challenges exclusive to their environment. Spirent also has extensive experience and expertise in going beyond these models, to customize ITO solutions to the exacting requirements of each unique customer.



Customer Environments Before ITO

Spirent's ITO Solution Models

- ITO Solution for Manual Testing Teams
- ITO Solution for Teams With Limited Automation
- ITO Solution for Development Teams
- ITO Solution for Teams With Advanced Automation

Spirent Solutions for ITO Full Coverage for the Five ITO Practice Areas

Spirent Services is a well-established global leader with rich experience in delivering next-generation solutions in the first three ITO practice areas: Emulation & Analysis, Test Automation, and Manual & Development testing.

Spirent Services also delivers ITO solutions in the Quality Management and Lifecycle Virtualization practice areas through strategic partnerships with both IBM Rational and HP.



The Five Practice Areas of ITO

ITO SOLUTION MODELS

ITO Solution for Manual Testing Teams

Test Process Profile before ITO

Manual testing and documentation, no automation or scripting

Demographic

- Service Providers
- Network Equipment Manufacturers
- Network Equipment resellers
- Enterprises—IT departments



The Challenge

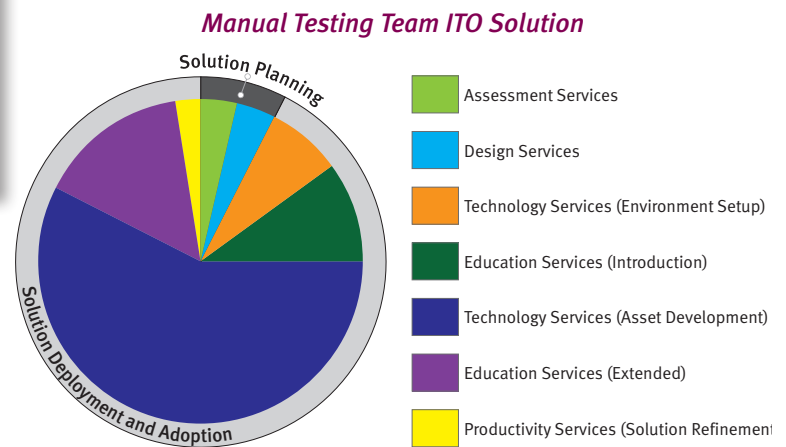
Manual testing teams, often without scripting background, need test automation to meet tightening deadlines, broader test coverage requirements, and increasingly complex test criteria. Due to the embedded inefficiencies of repetitive tasks, such as configuration upgrades, these teams are at risk of failure to deliver the testing and reporting required to meet rapidly accelerating release schedules. A company's competitive advantage and standing in the market is at risk if the quality of new products and services cannot be assured in a reliable and timely manner.

Solution Objectives

Provide a turnkey solution to allow test teams to hit the ground running without intense infrastructure impact or interruption to their work flow, which will in turn increase the efficiency of testers. The efficiency of automation will free engineers' time to develop more comprehensive QA testing. In this solution category, engineers use iTest to automate manual testing with data-driven scripts to deliver enhanced GUI-based push-button testing and to achieve accelerated testing volume in a measurable and exponential manner, including capture and replay of test cases. This solution requires no authoring knowledge within the test team.

Solution Delivery Model

This solution focuses on asset creation to assure that test cases, configuration scripts, quick calls, and response maps are seamlessly created and integrated into the test team's environment. Once the assets are in place, teams receive advanced training on the solution. Periodic Solution Refinement Reviews assure that subsequent developments and unforeseen challenges are addressed and that ROI success is benchmarked effectively. The ratio of solution components is found in the pie chart.



ROI and Value

Quick start iTest-driven testing, availability test cases, configuration scripts, setup scripts, common procedure libraries (a.k.a. QuickCalls) and response maps

Benefits

- Improved QA
- Best practices guidance
- Easily adopted by users with light scripting skills
- Large asset base, including industry-standard assets, and quick calls for reuse and repetitive tasks (i.e., system setup, system upgrade and traffic check)
- Data-driven automation scripts with user-changeable runtime parameters, such as IP addresses
- User is able to make changes or additions to the existing test cases and share process and data globally, streamlining future TOI requirements

ITO SOLUTION MODELS

ITO Solution for Teams with Limited Automation

Test Process Profile before ITO

QA Teams often test manually, possibly with homegrown automation solutions, but scripting is unavailable to expand or pull solutions together

Demographic

- Service Providers
- Network Equipment Manufacturers



The Challenge

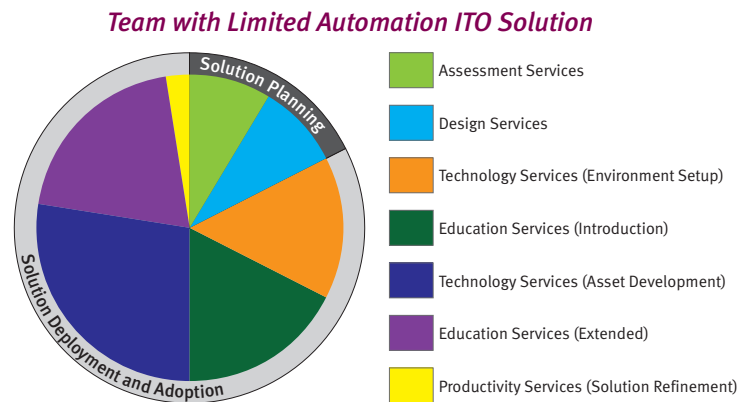
Lack of detailed and comprehensive reports in the bug tracking system leads to delays in communicating bugs from QA to R&D. This increases the difficulty in reproducing the captured bugs quickly for acceptable resolution turnaround times. Test teams face continually evolving, complex testing challenges that require experienced scripters to automate. As a result, the release of the product or service is delayed because re-testing, to confirm bug resolution, slows down the process. The inability to expedite this crucial, time-sensitive process directly affects the product release schedule and the organization's bottom line. This critical issue in turn delays revenue and reduces the number of releases possible within a year. As the competition adopts solutions addressing these inefficiencies, organizations that do not will fall continually behind, risking the core viability of the business model.

Solution Objectives

Support the input and output of large amounts of data and promote future-proofing for increasingly complex testing demands by providing the QA test team with modules that support a vendor-agnostic, web-based dashboard, test reporting, and test suite management, scheduling and execution. The solution also facilitates regression assets, which only need a few changes from release to release.

Solution Delivery Model

This solution focuses on basic training before asset creation followed by advanced training to maximize efficiencies and optimize adoption. Periodic Solution Refinement Reviews assure that subsequent developments and unforeseen challenges are addressed and that ROI success is benchmarked effectively. The ratio of solution components is found in the pie chart.



ROI and Value

Quick start to iTest driven automation, availability of configuration scripts, common procedure libraries (a.k.a. QuickCalls) and response maps

Benefits

- Reduced time to resolve bugs
- Ability to pass captured bugs from QA teams to R&D teams, maximizing time spent on resolving, instead of reproducing, bugs
- Test framework with asset base to demonstrate how to build robust test assets
- User-editable test cases and expandable asset base
- Response maps to help the team achieve rapid test case development goals

ITO SOLUTION MODELS

ITO Solution for Development Teams

Test Process Profile before ITO

Unit Testers and Development Testing Teams with varying degrees of scripting skills for modifying applications, but without the skills to develop or deliver an integrated and extensible automation solution

Demographic

- Network Equipment Manufacturers
- Service Providers



The Challenge

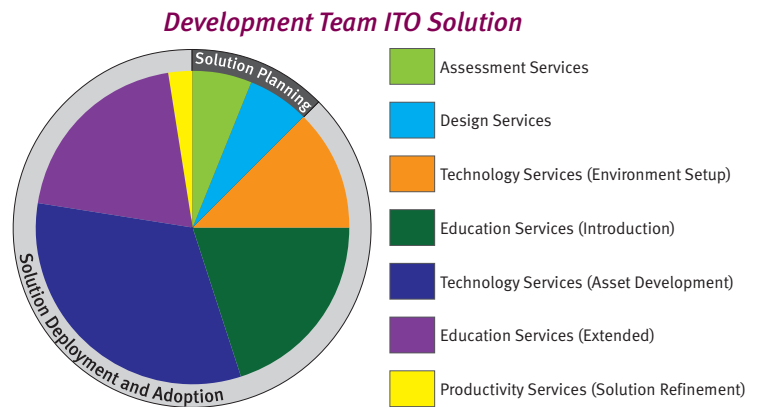
Traditionally, development testing teams using Java/C++ to automate test plans do not have the bandwidth to learn and build a complex automation framework with scripting languages like PERL or TCL to work with traffic generator testing platforms. As more teams move to Agile development, they must perform more testing of their own code. In addition, their productivity is impaired with the requirement to document their test cases. The volume of testing possible is compromised by this time-consuming task, which directly impacts productivity and time to market. While the test teams' scripting skills aid in the test plan automation, deploying a broader automation solution that guarantees holistic efficiencies is often outside the team's scripting ability to implement and ramp up effectively while maintaining and delivering on their current traditional testing responsibilities.

Solution Objectives

Provide a comprehensive automation framework that seamlessly integrates with the test team's current test plan coding, that supports black/gray box testing, and that accommodates documentation. The solution must facilitate robust complex interaction with the DUT and traffic generator. The solution must be able to run test suites after unit tests verify that the code changes do not break basic functionality. Tests cases and test plans must be replicated in real time and be easily shared across the organization, globally if needed. The iTest solution must amplify the test engineers' scripting capabilities to increase productivity and accelerate their entire testing campaign. ROI must be quantifiable. Quality Management and Life Cycle Virtualization solutions may be required.

Solution Delivery Model

Asset creation represents a major component of this solution. To assure optimal adoption, test teams receive installation, tool, and applied training before the deployment. Advanced training after the asset creation assures the seamless deployment of the solution. Periodic Solution Refinement Reviews assure that subsequent developments and unforeseen challenges are addressed and that ROI success is benchmarked effectively. The ratio of solution components is found in the pie chart.



ROI and Value

Quick start to building advanced iTest framework assets and complex test scenarios

Benefits

- Robust test framework
- Easy way to update scripts compatible with CLI changes
- Sample assets to help users understand complex response maps, advanced queries using XPath, event-driven automation, and the use of multi-threading for testing complex test scenarios
- Data-driven automation using multiple abstraction techniques
- NTAF compliance

ITO SOLUTION MODELS

ITO Solution for Teams with Advanced Automation Experience

Test Process Profile before ITO

Advanced QA Teams with selected automation solutions in place and skill sets to develop an integrated automation solution, but no time or bandwidth to design and implement an end-to-solution.

Demographic

- Service Providers
- Network Equipment Manufacturers



The Challenge

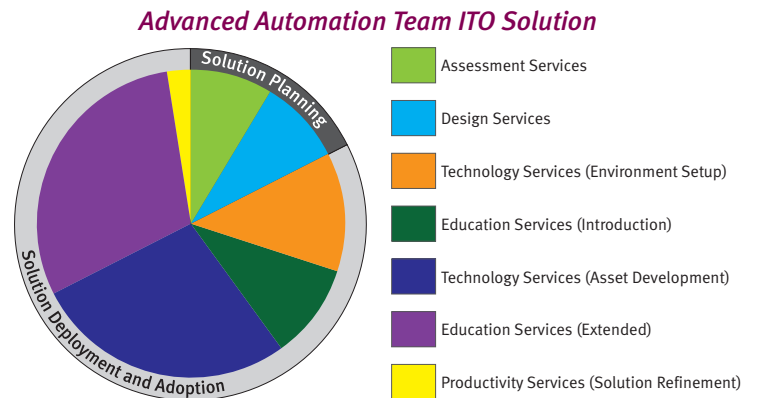
A QA manager whose teams use disparate automation tools has difficulty tracking and managing the overall testing program. As requirements evolve and expand, the technical limitations of current TCL/PERL frameworks compound inefficiencies inherent in the testing program. This systemic ineffectiveness impacts critical decision-making as well as the ability to adjust programs for needed efficiencies. Adopting home-grown solutions to integrate the various automation tools without qualified expertise can result in costly delays and improper solution deployment and can also require continual ad hoc post-deployment support.

Solution Objectives

An orchestrated deployment of a solution that promotes powerful test program management and incorporates essential yet disparate automation tools to achieve seamless integration. The solution must reduce the time to develop new test assets in tighter schedules, integrate test traffic equipment, and expand access to traffic generator functionality. The solution must also support framework maintenance and facilitate creation of regressionable test assets using a resilient test framework that facilitates event-driven automation of complex test scenarios. Quality Management and Life Cycle Virtualization solutions may be required.

Solution Delivery Model

A focus on advanced training assures optimal adoption of all aspects of the framework solution. Periodic Solution Refinement Reviews assure that subsequent developments and unforeseen challenges are addressed and that ROI success is benchmarked effectively. The ratio of solution components is found in the pie chart.



ROI and Value

Quick start to building advanced iTest framework assets and complex test scenarios

Benefits

- Robust Test framework and regressionable test assets from release to release with minimal need to change test assets
- Sample assets help users understand complex response maps, advanced queries using XPath, event-driven automation, and the use of multi-threading for testing complex test scenarios

How Services Optimize ITO ADOPTION

- ITO Solution for Delivery Model
- Solution Elements Overview

ITO Solution for Delivery Model

A critical component of a successful ITO delivery begins early in the engagement cycle with a combined effort of Spirent and the customer identifying the problem. Spirent presents a Proof of Concept that demonstrates the value of the ITO solution. The Spirent team then partners with the customer to design the solution to fulfill the testing needs. Finally, Spirent works closely with the customer on all the elements of deployment and adoption to assure successful integration of the solution.



Solution Elements Overview

iTest, iTest Lab Optimizer and iTest Team Server

At the core of Spirent's dynamic ITO solutions is the iTest family of products, which deliver an overarching web of powerful capabilities.

- **iTest**—An innovative capture mechanism to quickly build test cases with or without scripting that are automatically documented. The tests can be instantly rerun, transferred, or augmented for sophisticated automation testing with pass/fail criteria
- **iTest Lab Optimizer (iLO)**—A powerful and intelligent lab management solution designed to help teams increase lab utilization and performance by maximizing efficient use of resources. It allows you to:
 - Create and manage topologies graphically
 - Activate logical topologies dynamically at runtime
 - Reserve and schedule resources, testbeds and topologies
 - Report on resource utilization to improve lab efficiency
 - Manage and maintain lab inventory

The hardware appliance provides a turn-key solution for your lab

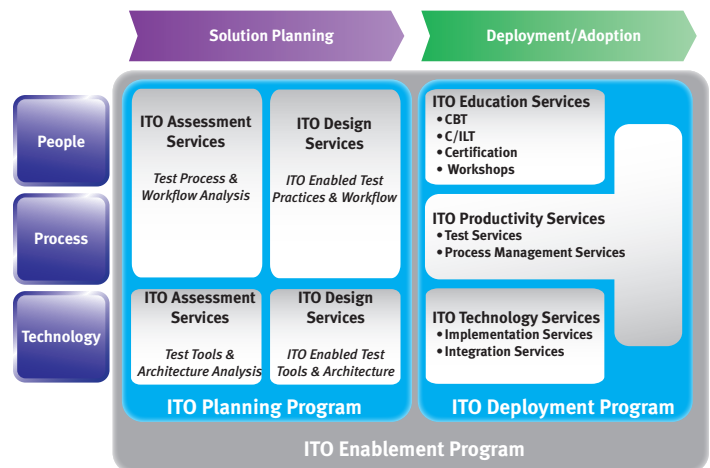
- **iTest Team Server (iTS)**—A collaboration platform at the heart of Spirent's test automation solution. iTS is a server-based appliance. It forms a natural extension of the iTest platform by harvesting existing iTest data for detailed analysis, enabling test leaders to make more informed release-based decisions. It offers a seamless experience for scheduling and executing test authored with iTest. Features include:
 - iTest Lab Optimizer
 - Web-based analytics dashboard
 - Test Suite management
 - Scheduling and execution modules

Spirent Test Platforms

Spirent's award-winning test platforms Spirent TestCenter, Avalanche, Landslide, and others, are part of the comprehensive solutions we deliver to our customers.

Spirent Services for ITO

To achieve the optimized, realized value of an iTest solution adoption, Spirent Services delivers a comprehensive range of offerings to ensure delivery success and quality assurance.



ITO ADOPTION

ITO Solution Components—in Detail

Spirent Services ITO solutions create an optimal center of excellence within the testing organization and facilitate the most effective iTest adoption within the organization. While test automation with iTest results in huge productivity gains,

a successful roll-out of iTest requires more than traditional feature training for end users. Spirent’s method of employing best practices recommends a sometimes overlapping approach to deliver the components below.

SPIRENT ITO SERVICE DELIVERY COMPONENTS

<i>Solution Phase</i>	<i>Component</i>	<i>Description</i>	<i>Deliverables</i>
Solution Planning	ITO Assessment Services	<i>Architectural Review</i> <ul style="list-style-type: none"> Analyze technology, tools, workflow and current testing practices 	Architectural assessment, gap analysis and recommendations.
	ITO Design Services	<i>Define Solution Objectives</i> <ul style="list-style-type: none"> Establish ROI metrics and benchmarks Develop statement of work 	<i>Design Proposal</i> Project timeline for rollout/adoption, working document—a journal of the different phases of delivery template, ROI template.
Solution Deployment & Adoption	ITO Technology Services—Environment Setup	<i>Set up of customer environment framework</i> <ul style="list-style-type: none"> Required prior to training 	<i>Environment Elements</i> Version controls system—SVN (optional: CVS, GABE, Perforce); Reporting database; Wiki (media or Confluence) with Starter Kit; CBT; iTest License Server; iTest Team Server appliance, iTest software implementation in customer server, or turnkey custom appliance integration; iTest Lab Optimizer; Spirent ITO Partner solution integration as needed.
	ITO Education Services—Introduction	<i>Introductory Training</i> <ul style="list-style-type: none"> Focused on basic iTest tool topics delivered before solution integration in the customer environment 	<i>Hands-on Training</i> Conducted in a controlled VM environment. Training includes sample set of use cases to be implemented, basic response map training, effective use of source control and asset sharing.
	ITO Technology Services—Asset Development	<i>Asset Creation</i> <ul style="list-style-type: none"> Reference tests Framework assets 	<i>Analysis of Test Plans—Creation of Reference Tests & Framework Assets.</i> Asset development includes creation of customer specific session profiles, response maps and test assets. Continuous leveraging of source control. May include custom creation of initial test assets (i.e. convert existing automation or implement entire test plan).
	ITO Education Services—Extended	<i>Training on Advanced iTest applications</i> <ul style="list-style-type: none"> Customized curriculum delivered either during or following asset creation in the customer environment 	<i>Onsite Hands-on Training—Leveraging Customer-Created Assets</i> Training to include complex response maps, use of custom queries and XPath; Threads; Traffic generator; Regression.
	ITO Productivity Services	<i>Solution Refinement Review</i> <ul style="list-style-type: none"> Evaluation of original objectives and progress of solution success continuum 	<i>Periodic Reviews—Conference Call/WebEx/Face-to-Face Update/Finalize ROI template—data affirms iTest investment value and supports justification for more licenses if required. Best Practices, Methodologies, Frameworks, as required.</i>

How Services Optimize ITO ADOPTION

- Engineering Services Profile
- Testing Services Profile

Additional Professional Services from Spirent

Spirent Professional Services adds test methodology and network expertise to your internal mix of resources so your company can focus on executing its core business strategy. Our Professional Services team improves operational efficiencies through an analysis of your existing methods and systems. We provide the expert solutions that are custom-tailored for your internal requirements.



Engineering Services Profile

Including, and at times beyond, the scope and requirements of the ITO solution sets described in this collateral presentation, our testing experts are uniquely qualified to support your custom development needs. We reduce product development risks and shorten time to market by providing lab and test automation solutions. Engineering solutions include:

- Topology management—authoring, sharing and scheduling tools
- Physical layer connectivity, eliminating manual patch panels
- Test case authoring tools
- Full-featured network emulation and analysis
- Complete test case authoring environment
- Device configuration made simple
- Implementation of custom test cases in a regression environment
- Centralized management and archiving of test cases
- Management and organization of test cases into suites and campaigns
- Automated scheduling of test cases and test suites, results management and archiving, as well as automated reporting of test results

While available as stand-alone engineering offerings, a number of these engineering services, as well as the testing services below, may be also incorporated with ITO solutions.

Testing Services Profile

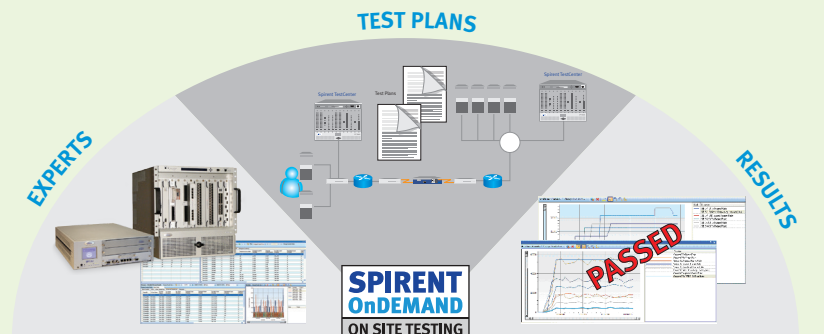
Our expert testing knowledge helps you to identify the most efficient path to improved network performance. We help you ensure that new products, technologies and vendors meet your performance requirements to avoid costly surprises after launch of your product or service.

Testing Services include:

- Comprehensive outsourced testing
- Test methodology creation
- Test equipment rental option for short test cycles and tight budgets
- Highly-skilled test engineers for test execution
- Design validation
- Scalability projections
- Security assessment
- Implementation validation
- Data analysis and report creation

OnDEMAND Packaged Test Services

Spirent packaged Professional Services provide quick and proven solutions for situations that would be too risky or expensive for customers to develop or implement in-house. Along with Data Center, Web, Security, Network and VoIP Assessment Services, Spirent offers packaged solution services that span the range of wireline and wireless technologies.



How Services Optimize ITO ADOPTION

• Spirent ITO Partner and
Integration Solutions

Spirent ITO Partner and Integration Solutions

Spirent's partnership with IBM Rational and established integration solutions for HP ALM completes our comprehensive full offerings of solutions for all of the remaining ITO practice areas of *Quality Management* and *Lifecycle Virtualization*.

iTest Integration with IBM Rational Quality Manager (RQM)

RQM is a test and quality management tool to manage quality assurance team projects:

- New iTestRT adaptor
- Seamless execution of iTest test cases from RQM



iTest Integration with HP ALM (Quality Center)

Seamless integration between iTest test cases and HP ALM for:

- Test plans and test instances for test execution
- Editing or publishing test cases and reports



CREDENTIALS

Spirent ITO Case Study

European Service Provider—QA Team with Limited Automation ITO Solution

The Company

Headquartered in Europe, with presence in Europe, Africa and Latin America, this integrated operator and global service provider is one of the world leaders in the telecommunications sector, providing communication, information and entertainment solutions. It operates in 25 countries, with over 306 million customers.

The Customer Challenge

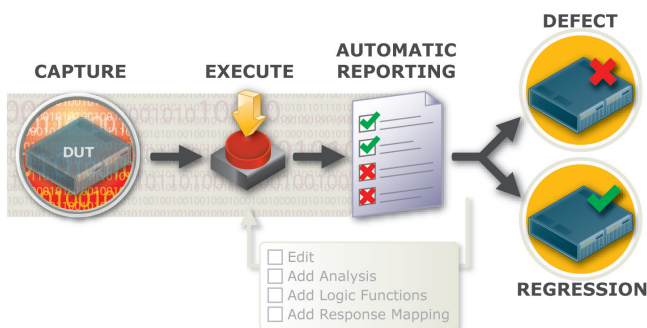
Having recently acquired another company and integrating two engineering groups – one involved with manual testing, the other having semi-automation already integrated – the company needed a solution that implemented an inventory of test devices and test plans which were outside the capabilities of both testing teams. The company also required a standards-based system for regression testing their CPEs and DSLAMs consisting of the following elements:

- Test cases based on Broadband Forum, ITU-T and Deutsche Telekom standards
- Loop and noise simulation equipment
- 8 test paths to allow parallel testing; 1 pair ADSL/ADSL2/VDSL2 testing
- 1/2/3/4-pair testing of SHDSL and SHDSL.bis
- Multi-user interface; Test queuing system
- Ability to change the test system test cases in a GUI-based editor

The Solution

Spirent’s “eART” (extensible Automated Regression Test) solution used iTest to provide full control over test authoring and test execution. This delivered hands-on ability to refine test cases easily, provided easy-to-read test cases, enabled capturing company Intellectual Property, and facilitated sharing, extending and future proofing of test assets. The test bed included the following:

- Loop length simulator
- Noise Generator and Noise Injectors
- L1 Switching for up to 144 2-wire CPEs and 96 2-wire DSLAM ports
- Power control ports for 128 CPEs
- Spirent iTest development system: Software for creating new test cases and communication with devices in the test system
- Common Test cases from TR-67, TR-100, TR-112 and TR-114
- Web User Interface:
 - Create tests, queue up tests, monitor test case progress
 - Create and save test suites to be run in batches or individually
 - View and download results
 - Add CPEs and DSLAM ports to a test system
 - Add noise files and noise profiles



Benefits and Results for Customer

- Gained efficiencies through unified solution to control test device and test plan control from one central easy-to-use solution
- Team productivity multiplied, freeing engineers to work in other critical testing requirements
- Test campaigns met release deadlines, enabled company to get more new offerings to market on schedule
- Future capability for expansion of testing infrastructure assured

CREDENTIALS

Spirent Services Qualifications

NTAF and Spirent



Spirent Communications is a founding member of the Network Test Automation Forum (NTAF).

NTAF is designed to bring together

test solution vendors and their users to simplify and promote the interoperability of commercial testing tools and test infrastructure for the data communications and telecommunications industry. By providing open protocol and a common framework and foundation for automation of network testing, NTAF alignment reduces cost and assures optimization of integration. Visit <http://ntaforum.org> for more information.

Spirent Customers

Spirent has been a pioneer since the advent of network testing and GNSS simulation 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. Spirent also services governments worldwide, which includes military and space agency projects.

Spirent Services Expertise

Spirent provides services expertise for all major communications vendors. Our test methodology and automation experts include IETF engineers and RFC authors who have developed many of the industry's acclaimed benchmarks. They help define standards and performance tests for dozens of industry forums and standards bodies.

World-Class Service Delivery Process

The primary elements of Spirent Professional Services' highly-acclaimed world-class service delivery process are:

- *Discover*—gather requirements; perform gap analysis
- *Define*—create statement of work; present roadmap and resources, illustrate ROI
- *Develop*—test cases; write scripts; develop code
- *Deliver*—deploy test engineers; manage project; measure and report
- *Debrief*—refine service optimization; assure customer needs and expectations are met



Americas

1-800-SPIRENT
+1-818-676-2683
sales@spirent.com

**Europe and the
Middle East**

+44 (0) 1293 767979
emeainfo@spirent.com

Asia and the Pacific

+86-10-8518-2539
salesasia@spirent.com

