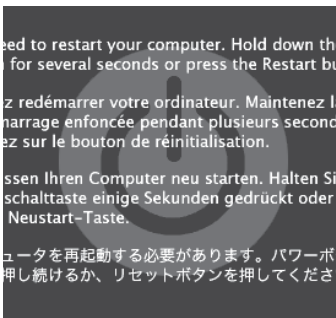


NTS Services Spotlight: Software Testing

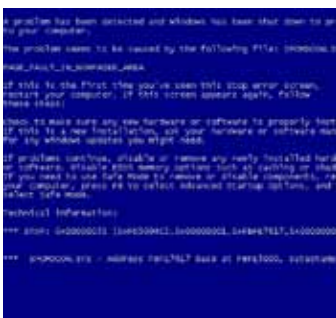
Specialists in Testing and Evaluation



Defective code accounts for as much as 45% of computer-system downtime. Have you got the bugs out of the system?



U.S. companies lose over \$100 billion a year in lost productivity and repairs due to defective code.



Don't let this be your software! Let NTS perform testing so this isn't what your customers remember about your program.

Software Compatibility / Interoperability Testing

Compatibility and interoperability testing focus on exercising the product-under-test under an array of software and hardware variables (e.g., different operating systems, additional software applications, such as web browsers, and hardware, such as graphics adapters, processors, chipsets, etc.). With over three decades of growth and refinement, NTS's test methodologies are unparalleled in the area of compatibility and interoperability testing. With our extensive in-house library of up-to-date software and hardware, NTS can simulate nearly any real-world environment in which your product may be utilized.

Test failures are routinely regressed using industry standard methodologies, and known functional hardware and software. Compatibility testing seeks to verify the compatibility of a vendor's product specifically with particular hardware or software (e.g., with the operating system, a word processor with a printer, etc.). Interoperability testing, on the other hand, typically focuses on validating "peaceful coexistence" (e.g., a word processor and spreadsheet program can both be installed on the same platform without causing problems with the other).

Software Functionality Testing

Are you releasing a new product? NTS can exercise your product's functionality through alpha, beta and/or golden master phases of development. NTS can start by developing comprehensive test plans, detailing test methodologies or you can supply us with a test plan to execute. Functionality testing can be performed on hardware or software products to verify that your product functions as designed. For software products, NTS can exercise the various execution paths, either manually or through automated scripting tools such as WinRunner, SilkTest, Visual Test, etc. During functionality testing, you can select our detailed reporting mechanisms, or we can adopt yours.

The general purpose of functionality testing is to verify if the product performs as expected and documented, typically in technical or functional specifications. Developers creating a new product start from a functional specification, which describes the product's capabilities and limitations. NTS Test Engineers utilize this specification, if available, as a guideline for expected product responses. Tasks are exercised to test specific features or functions, and the results of these tasks are verified by NTS to be in compliance with the expected responses. This type of testing is beneficial to product developers who are creating a new product or an existing product which has undergone significant enhancements or changes in capabilities. If you don't have a technical specification for your product, NTS can create one for you or perform testing using exploratory test methodologies.

Products are typically subject to changes throughout development, maintenance, and evolution due to a variety of reasons, such as changed requirements (both functional and nonfunctional), update technology and upgrade hardware or software platforms. The changes bring risks to the product because change propagations may introduce new bugs and anomalies, sometimes even fatal one. Regression testing is a technique to verify the integrity and correctness of the modified product.

About NTS

NTS is a world leader in assisting organizations to access domestic and international markets. We are a single source for a full range of integrated engineering solutions, product testing, standards compliance, project management staffing solutions, engineering and managed services. Globally accredited by leading regulatory agencies, NTS can provide cost-effective programs to meet your requirements at one of our many U.S. or international facilities, or we can provide on-site solutions. NTS is the nation's largest independent standards compliance and product testing company serving companies within the aerospace, defense, automotive, telecommunications, electronics, power, medical device, computer, software and financial markets.

NTS Services Spotlight: Software Testing Specialists in Testing and Evaluation



Technology, skills, and experience to test all of your technology products.



NTS uses the latest technology to verify the compatibility, functionality and compliance of your products.



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Highlights and Primary Test Specifications

Compliance & Certification Testing

- ▶ USB Compliance Testing – Covering the entire spectrum of USB certifications, including:
 - USB 3.0 SuperSpeed Certification testing of devices & system/hub/host controllers
 - USB 2.0 High-speed, full/low-speed devices, silicon, and system/hub/host controllers
 - USB On-The-Go for high-speed and full-speed products
 - USB Embedded Host testing for high-speed and full-speed products
 - Wireless USB certification testing
- ▶ ZigBee Certification – Covering all the ZigBee products and profiles, including:
 - ZigBee Platform (PHY, MAC & ZCP) and ZigBee Network Devices (Gateways, etc.)
 - Smart Energy Profile 1.X – 2.0 coming soon!
 - Home Automation Profile, Remote Control/RF4CE Profile, Health Care Profile
 - Building Automation Profile, Input Device Profile, Light Link Profile
 - Retail Services Profile, Telecom Services Profile, 3D Sync Profile
 - In addition, custom test harnesses to verify the various profiles – the same tools used by NTS for certification!
- ▶ Multimedia over Coax Alliance (MoCA) certification testing for your home entertainment networking devices
- ▶ DIRECTV certification testing, covering Mid-RF & DECA – Hi-RF coming soon!
- ▶ Sirius XM certification testing for all your satellite radios – only authorized lab
- ▶ Wireless Compliance Institute ISA100.11a certification testing for wireless systems for industrial automation
- ▶ Microsoft WHQL/DTM/WHCK – Support for all product categories
- ▶ Compliance/Certification Program Development – Let NTS assist you in the development of a program to validate your standard/specification!

Quality Assurance Testing

- ▶ Compatibility – Exercising software or hardware under an array of supported operating systems, additional software applications and supported hardware
- ▶ Interoperability – Exercising hardware with a selection of hardware and software to confirm “harmonious coexistence” of the products
- ▶ Stress/Performance/Load/Scalability – Using either actual users or virtual users with tools such as LoadRunner, WebLoad, WinRunner, WebFT, TCL, Test Director, Visual Test and Open Source
- ▶ Benchmarking – Using internal-developed or third-party benchmark tools
- ▶ Competitive Analysis – Comparing client’s product with competitor’s product
- ▶ Usability/Look-&-Feel – Provide end-user analysis with various user experience (i.e., novice, intermediate, expert, etc.)
- ▶ Functionality – Exercising the various execution paths, either manually or through automated scripting tools such as WinRunner, Visual Test and WebFT
- ▶ Website Testing – Functionality, Browser Compatibility, Load/Stress/Performance using automation tools such as LoadRunner or WebLoad
- ▶ Security – Test to various security standards such as Common Criteria, ICASA, IEEE 802.1x, etc. using various third-party tools
- ▶ Localization – Software compatibility and functionality test across 35 different languages, such as FIGS, CCJK, etc.
- ▶ Custom Test Harness – Develop custom hardware and software tools in order to perform repeatable, automated testing on standards or specifications. Custom harnesses include ones developed for the ZigBee certification program.
- ▶ Automated Test Scripting – Develop automated scripts using various test tools, LoadRunner, WebLoad, WinRunner, WebFT, TCL Test Director, Visual Test, Open Source, C, C++, Delphi, Visual Studio and Visual Basic
- ▶ Test Plan/Test Case Development – Develop customized test plan/test case based on client’s specification and/or product documentation