

## Complex Testing of Virtual Infrastructure Management and Optimization Software

"Thanks to the amazing software test team that keeps on delivering great results. I can't thank them enough and we are grateful for their incredible contribution in creating 143 cases in FogBugz. In the past several weeks they have worked super hard to give us great results, and we appreciate everything they've done."

*Company  
vice-president*

### Customer

The customer is one of the leading developers of software for virtual machine management on personal computers and virtualization servers.

<b>Company</b>	<i>Software Provider</i>
<b>Business Domain</b>	<i>Virtualization</i>
<b>Services Used</b>	<ul style="list-style-type: none"> <li>✓ <i>Test Case Development</i></li> <li>✓ <i>Functional Testing</i></li> <li>✓ <i>Quality Assurance</i></li> </ul>
<b>Cooperation Model</b>	<i>Dedicated Team</i>
<b>Duration</b>	<i>2 Years</i>
<b>Efforts</b>	<i>10 Man-years</i>

### Project

The project included the development of two products:

- Software for converting physical machines into virtual machines and vice versa, for transforming virtual machines into physical ones.
- Software for virtual machine optimization.

### Challenge

- Software architecture analysis and test model development.
- Development of non-trivial test cases based on the results of the analysis of the scope of coverage of the current tests.
- Recreation of the testing environment that causes software malfunctions. This task became necessary when end-users of the product encountered defects that the customer could not reproduce.
- Functional testing.
- General quality assurance.

### Solution

- **Test Case Development.** Based on the results of the analysis of the customer's software, the test cases that were created covered not only the software performance logic but also the dependence from the environment of launching (operating system, computer hardware (processor, hard disc drive configuration)).
- **Functional Testing.** The testing was split into the following components:
  - Installation testing
  - Licensing mechanism testing
  - Testing of the module of interaction with virtualization servers
  - Testing of the main logic of the project

## Cooperation with Remote Development Team

The cooperation with the customer was carried out in the following aspects:

- **Two-tiered Communication System.** This communication model meant active communication between our QA team and the QA team on the customer side, which allowed us to promptly resolve all arising questions as well as manager-level communication for project management-related issues.
- **Defect Tracking System.** To make all the work processes transparent, A1QA granted the customer access to own Clear Quest defect tracking system. The A1QA team was also given access to the Customer's defect tracking system.
- **Efficient Process of Test Case Acceptance.** After every stage the customer was able to control the results and apply changes where necessary.
- **Complex Reporting System.** The reporting system was complex: the customer received daily progress reports, defect monitoring results and completed task reports.

## Technologies used

**Planning system:** MS Project

**Defect Tracking System:** IBM Rational Clear Quest

**Operating Systems:** Microsoft Windows (NT, 2000, XP x86/64, 2003 x86/x64, Vista x86/x64, 2008 x86/x64, Seven x86/x64)

**Virtualization Servers:** VMware ESX VI 2.5 (ESX 3/3.5/i, Virtual Center 2.5), Microsoft Hyper-V, Citrix XEN

**Supported Formats:**

- **Physical to Virtual and Virtual to Physical converting:** CentOS 5.1, Debian 4, Ubuntu 8.1, RedHat 8, RedHat Ent 5.0, SuSe 9.1, OpenSuse 10.3 & 11.0, Microsoft Windows (2000, XP, 2003)
- **Virtualization Platforms:** VMware ESX server (3.x), VMware (VMware Workstation, VMware Server), Microsoft Virtual PC (All versions), Legacy VMware (ESX 2.x), Microsoft Virtual Server (All versions), Virtual Iron (All versions), XenServer (4.0.1 and above), Microsoft Hyper-V Server

**Network Protocols:** TCP/IP, UDP, named pipes

## Success

The cooperation with our QA teams allowed achieving the following results:

- Test cases that provided maximum coverage of the customer's software functionality were created.
- The period from the beginning of development until the release of the product to the market was reduced.
- The customer saved time on communication with the development team, as our thoroughly planned work process enabled to resolve all the main issues and arrange defect fixing.
- The customer highly evaluated our ability to analyze requirements, promptly join the work process in terms of time deficit and swiftly react to changes in task priorities.
- The customer still cooperates with us on a regular basis.