THE PROBLEM

Our client, a world renowned antivirus development company required that their application, a combination of an antivirus and a firewall be tested for its functionality and usability.

In this case study we cover our experience about testing this particular application on multiple platforms along with its communication with different networks and operating systems.

The client required that the application be tested for its live updates from all specified operating systems to ensure error free execution. Also, the application had to be tested across several protocols to ensure that the communication between multiple platforms remains functional in all scenarios.

THE APPROACH

The QA Team at Kualitatem initiated the testing process by analyzing the application and its underlying architecture as a collaborative effort with the development team. During the analysis phase the team developed a comprehensive understanding of the application's communication processes, its interaction with various operating systems and the functioning of related communication protocols. To better cope with time-to-market pressure, Kualitatem's dedicated R&D team worked in close collaboration with the testing team and helped them achieve timely results.

After detailed analysis and domain understanding functional testing of the application was initiated to probe suspected system weaknesses. Application stability and behavior were put to test in order to gauge the response of this application under different combinations of system interactions.

In order to check for expected system behavior a sub-network was created to simulate the interaction of application across multiple networks. Following is a list of protocols and OS that were used to test the application:

Protocol Name	Port Range
DHCP	68
SSH	22
SMTP	587
POP3	110
SMTPS	465
HTTPS	443
NNTP	119
TELNET	23
WHOIS	43
NETBIOS	137-139
IRC	194
FTP	21
DNS	53
IMAP	143
REMOTE DESKTOP	3389
MSRPC	135
SMB	445

Operation System	Version
Windows	Vista/XP/2000/NT/98
Linux	Red Hat/Ubuntu

Protocols Table and OS Table are the subset of the ones which were tested and reported to the client as per their requirement.

Testing the application by making sub-networks proved to be an efficient technique that enabled the team to efficiently test multiple protocols. This would not have been possible otherwise. Data generated through testing revealed that some protocols which may not be used as frequently as others were not performing as expected. Also less issues where encountered when the application was running within a single network, however if it had to operate between networks there were significant issues identified and reported. The team came across multiple issues while verifying protocol communication between the same operating systems. The issues increased significantly when the communication protocol was tested for different operating systems.

SUMMARY

The project carried a few challenges in the form of tight deadlines and the need for prior R&D. Our team met these challenges through following a structured and phased approach. R&D was carried out, application was analyzed and then functional testing was performed within multiple environments. Detailed supporting documentation was produced at each step to improve communication and traceability. This enabled the team to deliver precise results within time and enabled the client to launch a high quality product with reliability and confidence.