Automated System Helps Siemens Test Gigaset Cordless Phones

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The Challenge: Creating an automated system for testing a two-line cordless phone system.

The Solution: Using LabVIEW™ to automate a system to test the quality of the Gigaset® cordless phone system.

Introduction

Siemens Communication Devices is the design and manufacturing arm of Siemens American cordless phone product line. Our software design assurance group is responsible for verifying the operation of our phones to stringent specifications. This involves regression testing new software releases to verify error fixes while ensuring that existing code remains non-corrupted.

The unit we needed to test was the Gigaset 2420, a two-line cordless phone

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system that can handle up to eight cordless handsets, all operating on the 2.4 GHz spectrum. Once the base unit is plugged into AC power and the RJ-11 phone jack, there is no need to separately wire any of the cordless handsets.

System Requirements

Our requirements were:
- A PC-based automation test system that uses script files to control the device being tested. A script file is an ASCII

plain text file that contains all of the information necessary to perform a specific test. We can generate scripts by recording the units under test (UUT) or by typing in the steps by hand. With the system, we should be able to test all aspects of the device either manually or by processing one of its stored scripts.
- We needed a programming platform that would facilitate rapid development of a phone testing system, and that would work with the hardware we needed to use.
- We needed a simple method to regression test multiple software releases on a single platform with the ability to replicate the tests on future platforms.
- The chosen regression testing method had to be simple so that new personnel could quickly learn to facilitate new test generation.

System Setup

LabVIEW was perfect for the task. To test the phones, we used the four-port serial card for serial communications along with the AT-AO-10 analog output board and an E Series multifunction I/O board for audio testing. We connected all the equipment to a PC running Microsoft Windows 9x.

Using the LabVIEW-based testing system helped us in three areas. First, we can record scripts for testing the phones, known as the UUT, by pressing keys on the phone or by simulating the phone and keystrokes on the computer. The simulator loads a representation of the phone on the screen. When we press the simulated keys, LabVIEW sends a

Simulated Base Phone Screen for Recording Scripts

command to the physical phone, which generates a response. Whether we use the actual phone or run a simulation, we record the keystrokes and responses into a script file.

Second, we process the UUT test scripts and record any errors that occur during testing. Finally, we develop a set of "helper" tools that perform tasks such as filling the phone book in the phone and filling the call log or sequence scripts so we can run more than one script at a time.

Results

The LabVIEW-based system saves us a great deal of time because we reuse many of the test scripts written for the Gigaset 2420 with only minor modifications for testing the Gigaset 2402. We lowered the bottom line development costs leading to a ground-breaking cordless phone line.

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