REMOTE ACCESS TO TEST EQUIPMENT
A SOLUTION FOR INDUSTRIAL TEST TRAININGS AND ENGINEERING SUPPORT

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Abstract

This paper presents the CRTC new actions for local and distant education concerning industrial testing. The remote access to the ATE is discussed. The VNC technology enables a full interaction between local support (i.e. a trainer) and the remote users sharing a common software session.

1. Introduction

Test is key component for semi-conductor industry because it allows controlling IC production yield and is an added value for the product itself. Nevertheless, semi-conductor companies have difficulties to find skilled engineers in this field because few universities and schools in France can offer an industrial test training to their students in electronics or micro-electronics department due to the lack of time, skilled teachers and test equipment [1].

Key words: Test engineering, Education, Distant learning, ATE, Remote testing

2. CRTC platform and services

CRTC is the Test Resource Center of CNFM (National Committee in Microelectronic Teaching) located in Montpellier, France. It has been created in 1997 to respond to the industrial demand in engineers with a double Design & Test competence.

CNFM is a French institution which coordinates initial training and continuous education in microelectronics. For more than 15 years, the CNFM has been in charge of the coordination between universities, microelectronics industries and French authorities. This is a consortium of 11 French universities and academic centers involved in microelectronics education. This consortium aims bringing together software (CAD tools) and hardware resources (ATE, clean rooms, …) for a common use, at a lower price.

Considering the huge cost of high-tech IC tester, the CNFM policy was to create one and only one test center for all French academic centers: CTRC in Montpellier was born.

The first tester installed was an Agilent 83000-F330t which allowed deploying digital, mixed-signal and memory test trainings among the different CNFM centers in France [2] and in four European universities (Barcelona, Stuttgart, Turin and Ljubljana) [3].

Since 2006, a new test system has been installed at CRTC. This tester is based on the Verigy V93000 Pin Scale latest test platform with 64 channels which can run from 200Msp only up to 3.6Gfps and 8 analog channels targeting both audio and video circuit applications.

In France, CRTC is the unique organization which proposes a large range of industrial test trainings to teachers, PhD and students in electronics. CRTC test trainings are dedicated to all three L, M, D levels.

Level L: study of the training device data sheet in order to verify its functionality, as well as its DC and AC parameters. Students are initiated to the tester usage by executing the training device test program.

Level M: study of the industrial test methods and development of a characterization test program. Introduction to diagnosis techniques.

Level D: study of advanced test features concerning digital and mixte-signal devices.

For PhD and teachers digital and mixed-signal test trainings agenda are based on Verigy’s ones.

Digital training agenda:

- Tester HW/SW overview
- Test program development:
  - Pin configuration, level, timing, Pattern
  - Continuity and Functional tests implementation
  - Test flow
- Test execution and Result analysis:
  - Datalogging
  - Debugging tools
- Characterization tests :
  - AC tests: Vil/Vih, Vol/Voh, leakage
  - DC tests: set up hold, propagation delay times
  - Shmoo plots
- Advanced test features:
  - Global variables
  - Pin Margin, Histogram
  - Burst mode
- Preparation to mixed-signal training:
  - Test methods

Mixed-signal training agenda:

- Mixed-signal tests theory
- Tester analogue HW/SW overview
- DAC Source and Measure
- ADC Source and Measure
- Clocking and Test methods
As the CRTC is Verigy’ second training center since February 2008, test trainings are also delivered to industrial people. They require Verigy’s agreement and are done using Verigy’s policy and training materials. The CRTC trainer is a Verigy certified trainer who also has 10 years experience in test engineering. The trainer is skilled in digital, mixed-signal and memory tests which allow CRTC to offer a large range of test services. Test trainings are executed based on a predefined planning or on demand according to the trainer’s availability.

3. Remote access to CRTC test facilities for trainings and test support

As CRTC first duty was to share the tester resource between different universities in France and Europe, a training environment was originally setup which allows a remote access to the test system as presented on the figure 1.

In this configuration all test resources (licenses and tester) are installed in Montpellier. By this way, CRTC allows to all its partners (teachers and industrial people) to avoid dealing with licenses installation and maintenance at their locations. Using the remote access solution for trainings, it allows having test trainings with a trainer in Montpellier and the class room somewhere else in France. It only requires at the class room site, to have the IP address of the server and a VNC client, avoiding the need for any particular software installation or license management. By this way, the trainer can follow the participants’ progresses during their test sessions remotely. Combining, VNC client with a Voice on IP tool, allows the trainer and participants to easily communicate.

This is shown in figure 2. Two users, from any class room location in the world, are working on their training labs using CRTC facilities though VNC client. Their trainer, in Montpellier, follows their progress by displaying each test session (figure 4) and can take control of their session if necessary. The trainer can present new tool on his test session that both participants can follow from their site.

Today, teachers from Strasbourg, Nice and Jussieu, give test trainings to their students using the CRTC tester in remote access.

This solution of remote access to CRTC tester is not only dedicated to test trainings.

Indeed, using this remote test access, CRTC also proposes to semi-conductors companies to sell tester time allocation, as it appears to be one of the main missing resource during test program development phase. Instead of verifying participants’ progress through VNC, the trainer can help engineers solving their test issues while developing their test program using CRTC test facilities.

4. Conclusion

In this project, we have presented the test training facilities offered by the CRTC to local or distant academic and industrial people. Strong of its 15 years experience, skilled employees and network configuration, CRTC future objective is to enlarge its offer to test development support and consulting to academic and industrial people.

5. References


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