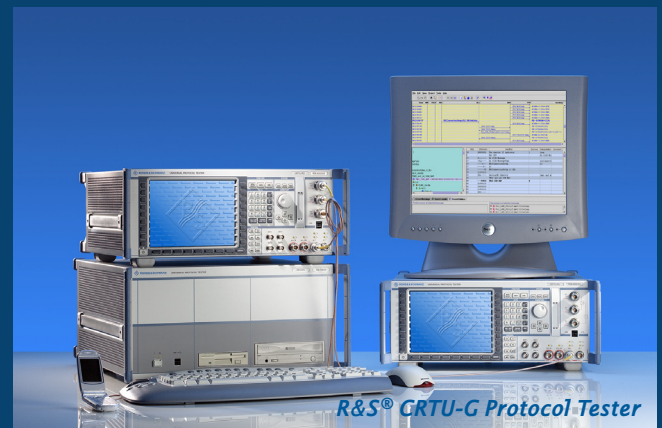


GSM PROTOCOL TESTER

Rohde & Schwarz



Challenge — Migrate from a commercial real-time operating system to an open platform enabling a new and affordable generation of protocol testers.

Solution — Replace commercial RTOS with Embedded Linux using ELinOS Industrial Grade Linux to ensure a smooth migration on a safe path.

Result — By using ELinOS Industrial Grade Linux, Rohde & Schwarz engineers were able to concentrate on their applications which led to a on-time on-budget migration.

“Using SYSGO’s ELinOS minimized our development risks and gave us the freedom to concentrate on our essential tasks”

— Stefan Bauer, R&D Hardware Test Systems

Rohde & Schwarz GmbH & Co. KG ranks among the world’s leading suppliers of test and measurement (T&M) equipment for mobile communications: Half of all mobile phones are developed and manufactured using T&M equipment from Rohde & Schwarz. The company’s T&M solutions are also intended for maintenance of current and future mobile radio systems. By providing innovative products for 3G and 4G, plus visionary solutions for future multimedia applications, Rohde & Schwarz plays a key role in tomorrow’s wireless communications.

Challenge

The R&S® CRTU family of protocol testers provides powerful functionality for design and verification of protocol stacks. It covers the entire range of GSM/E-GPRS and WCDMA/HSDPA protocol measurements required from the beginning to the end of an application project. The R&S® CRTU-G simulates a GSM base station and supports the GSM 850, GSM 900, GSM 1800 and GSM 1900 networks. The R&S® CRTU-W does the same for all UMTS frequency bands.

Rohde & Schwarz had been using a commercial RTOS to host the protocol stacks. Substantial royalty costs made this an expensive way to provide such functionality. One goal for the new R&S® CRTU-G and R&S® CRTU-W was to replace this RTOS.

Solution

Since there is no hard real-time requirement for the operating system hosting the GSM and UMTS protocol stacks, Embedded Linux became a strong contender to replace the commercial RTOS. From a financial standpoint, Embedded Linux was definitely a preferred solution because there are no royalties and no proprietary tool chains.

The Rohde & Schwarz T&M development team chose SYSGO's ELinOS Industrial Grade Linux. Deciding factors in favor of ELinOS were product maturity, usability, SYSGO's passionate support in Germany and unique service offerings.

ELinOS gave Rohde & Schwarz the opportunity to concentrate on the application and to avoid dealing with the complexity of setting up the Embedded Linux environment. By choosing Linux, the Rohde & Schwarz Mobile T&M development team automatically provided for the future by basing their developments on the standard POSIX API. And, using this standard, porting the stacks from the commercial RTOS to Embedded Linux proved to be an easy task. Linux also helped to add more and more features for IP Application Testing of mobile phones and so fulfill new requirements of their customers.

Result

The R&S® CRTU family of protocol testers has again defined a standard in the T&M equipment industry. Using ELinOS Industrial Grade Linux to create a comprehensive, flexible and affordable Embedded Linux environment helped Rohde & Schwarz to reduce development costs now and in future projects. Today, ELinOS is the standard tool chain used for test protocol stack developments of the Rohde & Schwarz T&M development team.

About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radio-location as well as secure radiocommunications. Established more than 70 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. It has approx. 6900 employees and achieved a net revenue of € 1.3 billion in the past fiscal year. Company headquarters are in Munich, Germany.

About SYSGO AG

SYSGO is specialized in design, implementation and configuration of device software for the embedded market. Besides SYSGO's real-time operating system solution for safety-critical systems, PikeOS, and the Embedded Linux development environment, ELinOS, SYSGO offers the development of device drivers, board support packages and firmware. SYSGO supports its customers with services for Embedded Linux, real-time and certification for safety-critical applications. The target markets are Aerospace & Defense, Industrial Automation, Automotive, Consumer Electronic and Network Infrastructure. SYSGO's customers include DaimlerChrysler, EADS Airbus, EADS Military Air Systems, Honeywell, IBM, Raytheon, Rheinmetall, Rockwell-Collins and Rohde & Schwarz. SYSGO AG was founded in Mainz, Germany, in 1991 and was reincorporated as a joint stock company in October 2002. The company has six facilities in Germany and Europe and provides a global distribution network.