

R&S® Legacy Pro: What it is all about

Are you looking for a technology refresh?

Overcoming test equipment obsolescence is paramount in military and aerospace applications. Test system support equipment often has a service life of more than 20 years and managing obsolescence over these extended periods is a critical part of the total life cycle support effort. However, replacing one or more obsolete instruments in a test system can have major consequences for the deployed test program set (TPS). An emulation strategy can help you incorporate new test instruments, providing a migration path from old obsolete instruments. The major challenge is managing this replacement without changing the existing TPS as the cost of a TPS rewrite dwarfs the cost of instrument replacement.

Challenges in replacement

There are important aspects related to replacing obsolete instruments which must be carefully considered. When legacy models are replaced, new versions are not necessarily compatible with the previous ones, either in terms of functionality or remote control command sets. The requirement of having minimal or no change to the TPS confronts instrument vendors with different challenges. In order to achieve backward compatibility, the emulation of obsolete instrumentation must include not only code compatibility but also behavioral compatibility.

Lessons learned

Over the years, Rohde&Schwarz has acquired extensive experience related to the requirements and challenges of emulating complex instruments such as network analyzers and spectrum analyzers. For example, in order to achieve behavioral compatibility the emulation capabilities of modern spectrum analyzers must appropriately handle different mixer levels, analog vs. digital resolution bandwidth filters, swept frequency spans vs. digital FFTs, etc. To solve your problem, Rohde&Schwarz can bring to bear its vast amount of knowledge and the lessons learned from its experience with automatic test equipment (ATE). Not only can we help mitigate migration risks, we can also suggest improvements in the areas of throughput and yield that have worked in similar applications. Backward compatibility requires command compatibility and true functional/behavioral compatibility. Rohde&Schwarz is a tried-and-tested partner for migrating, upgrading or modernizing your ATE.

Does your ATE system consist of obsolete models from a variety of suppliers?

Rohde&Schwarz spectrum and network analyzers and signal generators emulate a comprehensive set of legacy test equipment from HP/Agilent, IFR/Aeroflex, Anritsu and others.

Are ATE instrument specifications and form-factor issues a concern?

Rohde&Schwarz offers a broad range of instrument solutions to meet your ATE specification, application and architectural requirements. R&S® Legacy Pro instruments can also assist in reducing your overall ATE form factor by combining multiple instrument functionality into one single-box solution.

Do you have any concerns regarding risk mitigation and total cost of ownership?

Rohde&Schwarz has a long and successful history of working directly with customers whom we helped to replace legacy instrumentation. Our local application engineering expertise ensures seamless legacy code migration. Since we work to solve even the toughest "corner-case" code emulation problem, we continually receive positive customer feedback. We are committed to reducing total cost of ownership and actively work with A&D "self-maintainer" organizations by providing excellent and flexible support tools to make sure our equipment will meet the very long product life cycle demands on your military ATE systems.

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ROHDE & SCHWARZ

Do you need to replace discontinued instrumentation?

Rohde & Schwarz offers signal generators as well as spectrum and network analyzers that understand the existing code written for your test system.

- Retain your current test system software
- Benefit from our experience in code emulation
- Rely on our long-term support

R&S® Legacy Pro: Compatibility matrix

Spectrum Analyzers

	R&S®FSP, R&S®FSU, R&S®FSO, R&S®FSG	R&S®FSV	R&S®FSW
HP 8560E	•	•	•
HP 8561E	•	•	•
HP 8562E	•	•	•
HP 8563E	•	•	•
HP 8564E	•	•	•
HP 8565E	•	•	•
HP 8566A	•	•	•
HP 8566B	•	•	•
HP 8568A	•	•	•
HP 8568B	•	•	•
HP 8591E	•	•	•
HP 8594E	•	•	•
HP 8594L	•	•	•
HP 71100C/P	•	•	•
HP 71200C/P	•	•	•
HP 71209C/P	•	•	•

Network Analyzers

	R&S®ZVL	R&S®ZVB, R&S®ZVA	R&S®ZNB, R&S®ZNC
PNA	•	•	•
HP 8714	•	•	•
HP 8719C/D/ES/ET	•	•	•
HP 8720C/D/ES/ET	•	•	•
HP 8722C/D/ES/ET	•	•	•
HP 8730	•	•	•
HP 8753C/D/ES/ET	•	•	•
HP 8510E	•	•	•
HP 8510SX	•	•	•
HP 85106D	•	•	•
HP 85107B	•	•	•
HP 8510XF	•	•	•
HP 85108A	•	•	•

Signal Generators

	R&S®SMA100A	R&S®SMB100A (1.1 GHz/2.2 GHz/ 3.2 GHz/6 GHz)	R&S®SMB100A (12.75 GHz/20 GHz/ 40 GHz)	R&S®SMBV100A	R&S®SMC100A	R&S®SMF100A
HP 8642	•	•	•	•	•	
HP 8643/8644/8645	•	•	•	•	•	
HP 8647/8648	•	•	•	•	•	
HP 8656/8657		•	•	•	•	
HP 8662/8663	•					•
HP 8664/8665	•	•	•	•	•	
HP 8673			•			•
HP 8340/8341			•			•
HP 83620/83622/83623/83624/83630			•			•
HP 83711/83712			•			•
HP 83731/83732			•			•
Agilent E4428C (ESG analog)	•	•	•	•	•	•
Agilent E4438C (ESG vector)				•		
Agilent E8257D (PSG analog)			•			•
Agilent E8663B/D (PSG analog)	•		•			•
Agilent N5161A (MXG analog)	•	•	•	•	•	
Agilent N5162A (MXG vector)				•		
Agilent N5181A (MXG analog)	•	•	•	•	•	
Agilent N5182A (MXG vector)				•		
Agilent N5183A (MXG microwave)			•			•
Aeroflex 2023/2024/2025	•	•	•	•	•	
Aeroflex 2030/2031/2032	•	•	•	•	•	
Aeroflex 2040/2041/2042	•	•	•	•	•	
Aeroflex 2050/2051/2052				•		
Anritsu 68017/68037			•			•
Racal-Dana 3102	•					
Racal-Dana 9087	•					
R&S®SMGU	•					
R&S®SMHU	•					
R&S®SML		•	•	•	•	
R&S®SMT	•	•	•	•	•	

Power Meters

	R&S®NRP2
Agilent/HP 436A	•
Agilent/HP 437B	•
Agilent/HP 438A	•
Agilent E4418B/E4419B	•
Agilent N1911A/N1912A	•
R&S NRP	•

Audio Analyzers

	R&S®UPV	R&S®UPP
HP 8903B	•	•

R&S® Legacy Pro: Achieving code compatibility

Migrating from obsolete instrumentation requires new instruments that emulate the legacy instruments to achieve code compatibility. Usually this requires the same interface (GPIB) that was used in the existing test system and an adoption of the existing command language. SCPI (Standard Commands for Programmable Instruments) has reduced the problem of interchangeability significantly. Since the late 1990s, remote control of most instruments is based on the common SCPI standard. Before that, legacy instruments used a vendor-specific command set which differed in syntax and semantics. However, the situation is quite different if these instruments need to be compatible with those of the earlier generations. This requires switching from the SCPI parser to a parser for the legacy commands which can understand the old syntax. During the development of code compatibility for legacy instruments, a number of issues came up that challenge developers of the emulation mode. Simply translating the legacy commands into SCPI is not enough. The emulation mode has to be activated first together with the selection of the emulated instrument model. While most of the legacy instru-

ments share a common set of remote commands, each model may respond to the commands quite differently. With R&S Legacy Pro, not only does the new instrument understand the legacy commands for correct implementations, it also makes the responses from the instrument, such as measurement results and query results, understandable to the legacy remote program.

Read more on the R&S Legacy Pro web page!

Drop-down menu list with all emulated HP analyzers (shown here: the R&S®FSV).

