R&S®LegacyPro
Dealing with obsolescence?

Test systems with an expected service life of more than 20 years are commonplace in aerospace and defense applications. Managing the maintenance and obsolescence of aging equipment in these test systems becomes increasingly critical and costly. Due to the dedicated applications of these test systems, complete replacement with a suite of latest version instruments is not always an option:

- **Certified test program set (TPS)** – The TPS controlling the test system instruments is often certified and any changes to the TPS for supporting new instruments can have major consequences, introducing high costs, operational risk and re-certification.
- **Old TPS** – Even if there is a desire to change the TPS, this may be prevented through lack of support or tools, e.g. compilers.

Bring your test system into the modern age…
Replacing obsolete test system equipment with the equivalent latest instruments should be straightforward, requiring minimum hardware and software changes. In reality, replacing obsolete instruments requires careful consideration of several important aspects to ensure complete backward compatibility:

- **Full emulation of legacy instrument** – Modern instruments running emulation must correctly interpret and react to all of the existing TPS commands. Compatibility also necessitates a legacy hardware interface, e.g. GPIB.
- **Functional/behavioral compatibility** – Most present-day instruments are digitally based and operate differently compared to their analog predecessors. These behavioral differences need to be accounted for in the emulation. For example, instrument preset settings need to match the legacy instrument.

…and reap the benefits
New instruments installed to replace and emulate old equipment in an existing test system offer further advantages:

- **Reduced cost of ownership** – Improved reliability; faster testing, leading to higher throughput and better yield; and lower maintenance and service charges.
- **Mitigating risk** – Improved overall system availability; minimum downtime for service and calibration; and plug-in replacement with no software changes.
- **Form-factor** – New instruments are generally more compact than their predecessors and, for some applications, can combine the functionality of multiple legacy instruments into a single-box solution, saving space.

R&S®LegacyPro from Rohde&Schwarz is the culmination of extensive knowledge gained from emulating complex instruments and a history of working directly with customers to successfully replace legacy instrumentation.

R&S®LegacyPro instruments include network analyzers, spectrum analyzers and signal generators. They support a comprehensive set of legacy test equipment vendors, including HP/Agilent, IFR/Aeroflex, Anritsu and Rohde&Schwarz.

Need to know more? Visit the R&S®LegacyPro web page:
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Instrument emulation – Breathing new life into existing test systems

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

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R&S®LegacyPro
Compatibility matrix

Spectrum analyzers

	R&S®FSU, R&S®FSQ	R&S®FSV	R&S®FSW
HP 8560E/8561E/8562E/8563E/8564E/8565E	•	•	•
HP 8566A/B	•	•	•
HP 8568A/B	•	•	•
HP 8591E	•	•	•
HP 8594E/L	•	•	•
HP 71100C/P	•	•	•
HP 71200C/P	•	•	•
HP 71209C/P	•	•	•
Agilent PSA series		• [1]	•
R&S®FSEA/B/M/K			•
R&S®FSP/U/Q		•	•

[1] Support of I/Q read-out.

Network analyzers

	R&S®ZVA, R&S®ZVB, R&S®ZVT	R&S®ZNB, R&S®ZNC
HP 8510 series	•	•
HP 8530A	•	•
HP 8714	•	•
HP 8753/8719/8720/8722 series	•	•
Agilent ENA series [1]		•
Agilent PNA series [1]	•	•
R&S®ZVK/M/R	•	•

[1] Development ongoing.

Signal generators

	R&S®SMA100A	R&S®SMB100A	R&S®SMBV100A	R&S®SMC100A	R&S®SMF100A	R&S®SMA100B
HP 8340, 8341		•			•	•
HP 8360, 83620, 83622, 83623, 83624		•			•	•
HP 83630, 83640, 83650		•			•	•
HP 8373, 83711, 83712, 83731, 83732		•			•	•
HP 8642, 8643	•	•	•	•		•
HP 8644, 8645	• (+AVI)	•	•	•		•
HP 8647, 8648, 8656, 8657	•	•	•	•		•
HP 8662, 8663	•		planned	planned	•	•
HP 8664	•	•	•	•		•
HP 8665	• (+AVI)	•	•	•		•
HP 8673		•			•	•
Agilent/Keysight E4421, E4422		•				•
Agilent/Keysight E4428	•	•	•	•		•
Agilent/Keysight E4438			•			
Agilent/Keysight E8257		•			•	•
Agilent/Keysight E8663		•			•	•
Agilent/Keysight N5161, N5181	•	•	•	•		•
Agilent/Keysight N5162, N5182			•			
Agilent/Keysight N5183		•			•	•
Aeroflex 2023, 2024	•	•	•	•		•
Aeroflex 2030, 2031, 2032	•	•	•	•		•
Aeroflex 2040, 2041	•	•	•	•		•
Aeroflex 2042	• (+ADF)	•	•	•		•
Aeroflex 2050, 2051, 2052	•		•			
Aeroflex 3416			•			
Anritsu 68017, 68037		•			•	•
Panasonic VP-8303A	•	•	•	•		•
Racal Dana 3102, 9087	•	•	•	planned	•	•
R&S®SMA100A						•
R&S®SME02/SME03/SME06	•	•	•			•
R&S®SMF100A				planned		•
R&S®SMG/SMGU/SMH/SMHU	•	planned		planned		•
R&S®SML01/SML02/SML03	•	•	•	•	•	•
R&S®SMP02/SMP03/SMP04		•			•	•
R&S®SMR20/SMR27/SMR30/SMR40		•			•	•
R&S®SMT02/SMT03/SMT06	•	•	•	•		•
R&S®SMV03			•			
R&S®SMY01/R&S®SMY02	•	•	•	•		•

Power meters

	R&S®NRP2
Agilent/HP 436A	•
Agilent/HP 437B	•
Agilent/HP 438A	•
Agilent E4418B/E4419B	•
Agilent N432A	•
Agilent N1911A/N1912A	•
R&S®NRP	•
R&S®NRVD	•

Audio analyzers

	R&S®UPV	R&S®UPP
HP 8903B	•	•

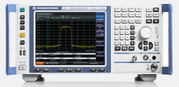
R&S®LegacyPro
Accomplishing code compatibility

Since its introduction in the 1990s, the Standard Commands for Programmable Instruments (SCPI) standard has revolutionized remote control and interchangeability of modern test instruments. However, test systems developed prior to the arrival of SCPI support legacy equipment that uses instrument-specific command sets that are incompatible with the modern standard.

R&S®LegacyPro from Rohde&Schwarz addresses the issue of code compatibility that arises when replacing an obsolete instrument with an up-to-date successor. Instruments supporting R&S®LegacyPro have a list of specific legacy test equipment that can be emulated. Selection is simple and once chosen, the tailored instrument emulation mode provides the following:

- An interpreting parser for the instrument to understand the legacy syntax and commands sent by the test system.
- Responses to the test system from the instrument that are fully understood and mimic the legacy instrument, e.g. measurement results and query feedback.

Drop-down menu list on the R&S®FSV, showing all emulated HP analyzers.



R&S®FSV
Spectrum Analyzer

R&S®ZVA
Network Analyzer

R&S®FSW
Spectrum Analyzer

R&S®ZNB
Network Analyzer

R&S®SMA100B
RF and Microwave Signal Generator

R&S®SMB100A
RF and Microwave Signal Generator

R&S®SMC100A
Signal Generator

R&S®SMBV100A
Vector Signal Generator

R&S®SMF100A
Microwave Signal Generator

R&S®NRP2
Power Meter

R&S®UPV
Audio Analyzer

R&S®UPP
Audio Analyzer