With the continued rollout of mobile broadband services enabled by technologies such as LTE and LTE-Advanced, accurate measurement of the user experience is more complex and critical than ever before. In mobile device development and deployment, engineers require lab test solutions that enable replication of real-world conditions and quantifiable metrics that are predictive of the actual end-user experience.

Spirent’s Live2Lab® Virtual Drive Test-Conversion Tool (Live2Lab VDT-CT) is a tool that works in conjunction with Spirent’s Vertex®, VR5, and SR5500 channel emulators. It imports drive logs captured in the field and automates the conversion process without requiring any additional software effort. The resultant data can be easily stored and played back in the lab to allow troubleshooting for issues found in the field. Live2Lab VDT-CT can be integrated with service experience measurement systems in a lab environment or a live network—enabling correlation of metrics between field and lab, a necessity for evaluating the mobile experience.

Live2Lab VDT-CT corrects for missing errors in captured data and can model additional MIMO and diversity conditions.

Applications
• Device benchmarking and comparison
• Research and development
• Design verification
• Regression testing
• Device design
• User experience measurement

Live2Lab VDT-CT works in conjunction with Spirent Vertex®, VR5, and SR5500 channel emulators.
Replaying the Live Network in the Lab

Live2Lab VDT-CT takes drive logs captured in the field and converts and maps them onto the lab test setup for realistic playback. It supports lab connections of up to 40 RF channels, which can be configured to:

- Unidirectional 2x2 downlink for 20 cells
- Unidirectional 4x2 for 10 cells
- Bidirectional 2x2 for 10 cells
- Bidirectional (FDD or TDD) SISO for 20 cells
- Bidirectional 4x2 for 5 cells
- Unidirectional Dual 2x2 + Quad 1x2
- Unidirectional 4x2 for 10 cells
- Unidirectional 2x8
- Hybrid 2x2/1x4
- Unidirectional 2x2/1x4

Live2Lab VDT-CT supports the processing of all major mobile technologies, including:

- FDD LTE, TD-LTE
- EV-DO, cdma2000
- HSPA+, HSDPA
- EDGE, GPRS, GSM
- Wi-Fi 802.11n/ac 2.4GHz, and 5GHz
- 1X TD-SCDMA

Users can capture the drive logs in a variety of popular logging tools:

- QXDM in ISF format
- JDSU (stand-alone or with up to 3 UEs)
- Anite Nemo
- PCTEL
- Accuver XCAL
- Transcom
- Rohde & Schwarz
- PCTEL

After they are imported, multiple logs can be concatenated or merged to generate more sophisticated logs for conversion.

In a drive route, users could see more than a hundred cells. It is unlikely most of the time that the lab setup can match the number of cells in the field. However, engineers still want the realistic cell dynamics as seen by the UE in the field for lab testing. Live2Lab VDT-CT makes it possible by introducing a number of mapping algorithms to suit different situations:

- Serving cell preservation in normal and harsh conditions
- Cell Preservation in normal and harsh conditions
- One-to-one mapping of strongest cells or longest appearing cells

High-Speed Applications

As users move into faster mobility scenarios such as traveling on high-speed trains and aircraft, devices are subjected to higher Doppler spreads. Live2Lab VDT-CT has the capability to import and analyze logged data at speeds up to 1620km/hr (1007mph).
Rich and Intuitive Graphical User Interface

In addition to the playback files for the channel emulators, Live2Lab VDT-CT also provides a rich set of graphics for intuitive analysis and verification. It visualizes the mapping process and the dynamics of cells during the drive as seen by the logging device and the device under test.

The graphical interface includes the following:

- Composite power graphics of multi-technologies for inter-RAT and handover analysis
- Filtered data graph for drive log data visualization
- Mapping data to show the results of cell mapping algorithm
- Geographic maps with many standard Google Map controls for drive route visualization and selection
- Selective call event identifiers (such as drops and handovers) for adding or removing instances from the drive test route

Live2Lab VDT-CT shows events like call origination, handover (idle and active), call drop, and throughput on the map along the route.

Simplified Connections and Greater Capacity

Spirent’s XD5 Multilink Duplexer allows a seamless integration with Vertex or VR5 that drastically simplifies cable connections and increases cell testing capacity. Live2Lab VDT-CT software detects the XD5 and displays its configuration editor, which allows XD5 provisioning and guidance for the cabling necessary for the chosen drive test. The XD5 eliminates external duplexers, splitters, and combiners, and reduces external cabling by almost half. It has a flexible architecture to support a wide variety of drive test scenarios with configurations of up to 16 SISO or eight 2x2 MIMO eNodeBs. See the XD5 datasheet for more information.

XD5 provisioning via Live2Lab VDT-CT installed on Spirent’s Vertex channel emulator.
About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges.

Spirent’s customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

For more information, visit: www.spirent.com

Live2Lab VDT-CT Integration Provides End-to-End Performance Testing in the Lab

Live2Lab VDT-CT is a key component in Spirent’s end-to-end solution for user experience performance testing in the lab environment. Live2Lab VDT-CT maps the RF data captured from the live network to Spirent’s Vertex, VR5, or SR5500 Spatial Channel Emulator, which then emulates the RF environment in the lab. Spirent’s channel emulators can connect directly to your lab-based network infrastructure or to one of Spirent’s network emulators. And for a more comprehensive solution, Spirent’s service experience measurement systems can be integrated to provide voice/video quality, call performance, data speed, battery consumption, and multi-service performance metrics, enabling correlation between field and lab tests and accurate evaluation of the user experience.

Ordering Information

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Contact Us

For more information, call your Spirent sales representative or visit us on the web at www.spirent.com/ContactSpirent.

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