The Central Recording System

The RT2 software has been designed from the ground up to deliver a fully featured user interface that has the "look and feel" of a cabled system with support of real-time data collection and spread management. The user can be confident that the expected seismic data is being collected via instant feedback from the RT2 spread manager and the areal seis-monitor. Attributes from daily tests, battery status, and telemetry status are always available to the user or they can be updated on demand. While the RT2 Central mimics the typical features of cabled telemetry systems, Wireless Seismic has also added many capabilities that make the RT2 a truly unique seismic recording system.

The RT2 Central employs a client-server architecture that enables crews to deploy tens of thousands of channels. The Central Server employs a distributed system architecture that supports several Linux®-based servers. As the channel requirements increase, simply add Linux servers into the Central enclosure to scale to larger system configurations. The Central Client supports multiple simultaneous Windows® machines, all running custom user interfaces into the RT2, allowing simultaneous access to the system by multiple seismic observers. For example, one observer can focus on shooting productivity while another observer can focus on deployment, troubleshooting, and inventory management. Each observer can save custom views based on the specific work ows employed.

A wide range of diagnostic information about the line and the data is displayed on the screens. Self-test information from the Wireless Remote Units (WRUs) is available in tables, and with available columns filters, the user can easily create troubleshooting lists. The spread manager and tables indicate the power state of the WRUs, whether the WRUs are
- asleep,
- in a standby state (telemetry is active, but the WRUs do not send data),
- armed and sending data, either continuously or via DoD (Data on Demand),
- or armed as an autonomous node.

High Productivity Vibroseis Management Support

The industry has seen significant growth in the fold and density of source points in the large seismic surveys acquired in areas such as the Middle East and North Africa over recent years. In order to maximize productivity, techniques have been developed that increase the number of vibrators deployed on these surveys. This increase in vibrator numbers has been met with a commensurate increase in the number and complexity of radio communications between the recorder and the vibrators. Without proper management tools, there is significant potential for disruptive message collisions between "ready" and "Post Sweep Service" (PSS) messages from the vibrators and "start" messages from the recorder.

Seismic Source Company's SourceLink™ software is a radio communication management tool which integrates with the company's existing Encoder hardware platform to initiate, fire, trigger, or monitor the vibrators and to pass these events to the recorder.

Central Hardware Features

- Integrated air management system
- Embedded Source Interface Unit (SIU)
- One- to six-monitor configurations available
- Embedded UPS

- 16-port Gbit Ethernet switch
- Shock and vibration mounting hardware available
- Operating temperature: +5° C to +40° C
- Storage temperature: -40° C to +75° C

Central Software Features

- Windows-based User Interface (Client)
- Multiple Windows clients
- Single- or dual-server configurations
- Dual-server configuration includes one Linux-based, server-grade computer
- Integrated source controller support:
  » Pelton (Inova)
  » Seismic Source
  » SGD-S
  » Generic
- Areal seis-monitor
- Configurable table filters
- Dynamite, Vibroseis, weight-drop, etc., and passive seismic monitoring modes

- High productivity Vibroseis management support
- Hybrid radio telemetry acquisition
- Interactive line management
- Spread-health dashboard
- Seismic data viewer
- Equipment status reports
- Auto skip-healing telemetry
- WRU repeater management
- Spread map layer management
- SEG-Y output
- SEG P1, SPS import/export
- Extensive, embedded help system

Dimensions

- 50.8 W x 63.5 H x 55.8 L cm (20 W x 25 H x 22 L in.)
- With mounting base: 70.89 H cm (27.91 H in.)

Weight

- 79.83 kg (176 lbs.) fully loaded (without mounting base)

Wireless Seismic has partnered with Seismic Source to integrate RT2 to SourceLink to give our users the capability of running complex Vibroseis techniques, such as Distance Separated Simultaneous Slip Sweep (DS⁴) or Independent Simultaneous Sweeps (ISS). The Source Queue Manager (SQM) is the window within RT2 where users can manage source points and their template state. In this integration, the SQM is controlled by the SourceLink software, running either on the client PC or on a separate Windows-based machine. Great effort has been taken to ensure that there is only one place to enter parameters, eliminating the need to set duplicate parameters in two separate systems.

Hybrid Radio Telemetry

RT2 features a robust **Hybrid Radio Telemetry** system that enables your seismic data acquisition project to continue, uninterrupted, even if radio connectivity is temporarily lost over portions of the spread. The standard operating mode for RT2 is real-time wireless recording with auto skip-healing, should any WRUs lose radio connectivity. With the hybrid telemetry mode, if radio connectivity is partially lost and auto skip-healing cannot overcome the immediate problem, then "stranded" WRUs will immediately switch to operating autonomously, buffering their seismic data into local memory. When radio connectivity is restored, buffered seismic data are wirelessly transmitted back to the Central recorder. The **Hybrid Radio Telemetry** further automates and simplifies the operation of RT2, making the radio network essentially self-sustaining and uninterrupted data acquisition a reality.

The RT2 **Hybrid Radio Telemetry** system offers a number of advantages when compared to "blind" autonomous nodal systems, including:

- No complex data harvesters—data are transmitted to Central wirelessly

- No large and expensive transcription trailers

- No additional computer hardware

- No skilled field technicians required to transcribe data—data transmitted via the RT2 **Hybrid Radio Telemetry** system are aggregated automatically into the proper SEG disk file without manual intervention

- No "last patch" effect—no huge backlog of recording units to transcribe after the last shot is taken

- No need to purchase 10% to 15% more autonomous nodes to support data harvesting and/or battery charging functions

- No delayed decisions from waiting for data collection and transcription
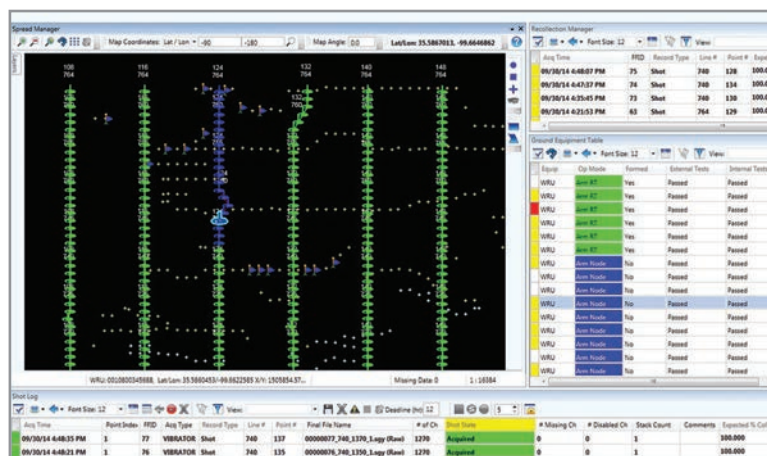
A screenshot of the RT2 Central shows WRUs in green collecting data in real time. The blue WRUs designate lost radio connectivity while continuing to record and store data to local memory. Production continues with no data loss.

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