The JDSU smart mobile network enablement portfolio is an integrated suite of mobile solutions providing unique visibility across the radio, access, backhaul, and core.

Delivering insight and actionable intelligence for transport, packets, and content, JDSU supports the self-healing, software-defined mobile networks of today and tomorrow. The end result for users is the best application experience, while network equipment manufacturers (NEMs), contractors, and service providers enjoy the lowest delivered cost. Providing the reliability, interoperability, and security the network needs, we are advancing tomorrow’s wireless networks today, from silicon to apps, small cells to macro, and RAN to core.

JDSU focuses on helping our customers meet market challenges while delivering superior service quality for end-users, driving growth and profitability. Our solutions serve the entire mobile life cycle:

- LTE and LTE-Advanced
- VoLTE
- Small cells
- Distributed antenna systems (DAS)
- Big data and customer-experience management (CEM)

JDSU understands your customers and can help you deploy LTE services quickly, cost-effectively, and deliver the highest service quality.

Applications served by the JDSU mobile network enablement portfolio

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Mobile Network Enablement

RANAdvisor

Facing Wireless Network Challenges

Optimizing networks, expanding service coverage, and rapidly deploying new technologies and data services, with the highest possible quality, is critical to customer-base and revenue growth. Having the right test and measurement tools in place to help meet these goals is essential—tools that are accurate, scalable, and cost-effective, providing deep insight into network performance and rapidly pinpointing the root cause of problems.

The RANAdvisor network optimization platform enables wireless service providers, network equipment manufacturers, and contractors to address their challenges in optimizing wireless voice and data network performance by quickly and accurately identifying problems. It is a Windows®-based wireless-network test solution for site evaluation, base-station turn-up, system acceptance, and ongoing optimization and troubleshooting. The platform grows as needs arise, and provides industry-leading performance during all phases of the network life cycle.

The platform’s functionality and performance addresses the challenges facing the wireless industry across all major technologies. JDSU is committed to offering early-to-market solutions to help you stay ahead of your competition as you roll out next-generation networks and services. Whether your system is LTE (FDD/TDD), HSPA+, CDMA, cdma2000®, 1xEV-DO Rev 0/A/B, GSM, GPRS, EDGE, W-CDMA/UMTS, WiMAX, WiFi, or a combination of technologies, the platform will help you address your challenges quickly and effectively.

Benefits

- Comprehensively supports 2G/CDMA/1xEV-DO Revs 0, A, B/WCDMA/HDPA+/LTE-FDD/LTE-TDD/ WiMAX™ technologies
- Finds problems faster with real-time KPIs
- Supports for voice-over-LTE (VoLTE) testing
- PCI forcing (Samsung Galaxy S4 i-9506)
- EARFCN (preference mode various S3/S4)
- UARFCN forcing on various S3/S4
- Band and RAT forcing
- Reduces map costs with OpenStreetMap support
- Lowers cost of ownership with a single platform that expands as needs increase
- Reduces test time with hardware auto-detection and configuration
- Easy-to-use GUI and graphical test sequencer
- Offers easy visualization with Google Earth export
- Open architecture compatible with all leading post-processing tools such as Actix and Windcatcher
- Tests anywhere with vehicle-based, backpack, and handheld solutions

Applications

- RF planning/verification/model tuning
- RF optimization and troubleshooting
- Spectrum clearing
- Interference analysis
- Benchmarking
- Test voice quality
  - PESQ and POLQA
- Test video streaming
- Test data services
- Test outdoors and indoors
- Test VoLTE
RANAdvisor

**W1314A/B Multi-Band Wireless Measurement Receivers**

These receivers are an integral part of the RANAdvisor system. Easy configuration and robust connections let users get quick and accurate measurements from the receiver when it is combined with the E6474A RANAdvisor wireless network optimization platform.

Easy connections and configuration let users analyze and optimize networks no matter where they are or on what technology they are based. With the right receiver, or receivers, users can obtain high-quality measurements fast.

**Benefits**

- Performs simultaneous multi-technology measurements during a single drive test or indoor survey
- Connects up to four UE devices with USB charging, without impacting specified receiver measurement performance (W1314A only)
- Improves measurement performance and adds new technologies as they become available through automatic software upgrades to extend product life
- Lightweight and low power consumption
- Indoor and outdoor applications

**Features**

- Supports LTE, UMTS, GSM, Mobile WiMAX, 1xEV-DO, cdma2000, iDEN, spectrum analysis, and continuous wave
- Performs all measurement collection and analysis within the receiver hardware to minimize laptop processing requirements, ensuring specified receiver performance
- Ruggedized housing with complete RF shielding
- Designed to withstand years of daily drive testing
- Integrated 50-channel, high-sensitivity GPS
- 4-port USB 2.0 hub with charging (W1314A only)
- Supports combinations of W1314A and W1314B receivers

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The RANAdvisor secure case
The introduction and rapid growth of smartphones and tablets within the wireless market has created congestion problems in networks worldwide. User behavior, driven by the new smartphone applications, has not only increased data usage, but also signaling and overall network issues. Mobile network operators need a solution that can replicate these issues on the same type of devices in the environments where customers experience them.

The ultra-portable TrueSite solution makes it easy to test any indoor environment—including airports, stadiums, malls, and offices. TrueSite can be deployed on a single smartphone or as part of a multidevice system controlled from an Android tablet. Using an Android-based tablet app or smartphone, a single technician can discreetly gather data from up to six smartphones and a single receiver. TrueSite minimizes repeat data-capture walks and post-processing by immediately identifying and geo-locating missing/faulty antennas and macro-ingress issues during collection. TrueSite is the optimal solution for all your indoor testing needs.

Comprehensive, real-time fault detection tools detect missing/faulty antennas, macro ingress, blocked/dropped calls, connection failures, and test failures. Identifying faults in real time lets you resolve problems immediately, eliminating wasteful retests. This saves hours in getting the network up and running, and is particularly important during venue testing where access is very limited and re-testing is often not an option.
**Base Station Test**

JDSU wireless test solutions for field applications cover all the different tests required to validate, install, and maintain base stations. The four main test areas in a base station are backhaul, feed-line, radio performance, and air interface.

JDSU analyzers help you:

- Accelerate time-to-revenue for new services—testing at all stages of network deployment, plus operation and remote monitoring capabilities to measure impact to QoS
- Ensure service quality and customer satisfaction—verification reporting supports site acceptance and automated measurements for results repeatability
- Minimize the costs of operating your network—a single instrument for base station, cable, and antenna analysis with frequency-range and feature optioning that is within your budget and that reduces training requirements

Mobile operators have different methodologies for installing and maintaining their network and, therefore, use different test tools such as dedicated feed-line or cable and antenna analyzers, multifunction analyzers, or base station analyzers for all base station testing areas.

**Features**

- Performs RF and optical testing in one instrument
- Allows for simultaneous measurements (two)
- Easily identifies LTE-A problems with carrier aggregation, MIMO analysis, and demodulation
- Market-leading signal demodulation
- Unique LTE MBMS measurements
- Full-spectrum inter- and intra-band nonintrusive PIM detection with a single instrument
- Up to 100 m remote control via Bluetooth®
Base Station Test continued

CellAdvisor™ JD720-Series Cable and Antenna Analyzers

Most problems in wireless networks occur at the base station infrastructure or feed line, which consists of the antenna system, cables, and connectors. It is essential to have the optimal instrument for properly installing and servicing cell sites.

The JD720 family provides all the measurement functions necessary to accurately verify a site’s transmission line and antenna system including signal reflections (VSWR or return loss), RF transmission power, and fault location (distance to fault), as well as testing the fiber links.

Benefits
• Rugged, lightweight design (< 4.4 lb/2.0 kg) is ideal for field use and includes 7-inch, daylight-viewable touch-screen display and backlit panel for low-light viewing
• Minimizes test times with measurements in less than 1 ms per data point and configurable limit lines with automatic pass/fail indications
• Offers increased measurement range from 5 MHz to 4 GHz
• Dual measurement display enables simultaneous DTF and VSWR analysis without toggling between screens
• Quicker measurements: around 0.65 ms/data point (up to 2001 data points)
• Quicker calibration: less than 3 seconds on each O-S-L calibration step
• Improved touch screen/user interface speeds and simplifies measurements

Features
• Measures power on coaxial or fiber cables interfacing with RF or optical power sensors
• Input power protection up to +40 dBm (10 W)
• Vector performance measurement with Smith chart display
• Fiber inspection and testing
• Cloud-enabled asset and test data management

Applications
• Measure reflection with results presented in VSWR, return loss, or Smith charts
• Determine fault locations using distance-to-fault (DTF) measurements
• Perform cable-loss characterization through different frequencies
• Verify all cell-site feed lines, RF, and fiber
• Perform unique fiber inspection and testing and optical power measurements
• Take two-port transmission measurements for insertion gain or loss tests that are ideal for isolating antennas, amplifiers, and filters
Base Station Test continued

**CellAdvisor JD746A/JD786A RF Analyzers**

These analyzers combine the functionality of spectrum analysis, cable and antenna analysis, and power measurements, covering all the measurements required for testing, acceptance, and troubleshooting the physical layer of base stations.

The analyzers offer a full scope of RF performance measurements such as channel power, adjacent channel power, occupied bandwidth, return loss, tower-mounted amplifier’s gain, and distance-to-fault location. The JD746A Interference Analysis function presents a spectrogram and RSSI showing RF activity for up to six signals through time, detailing spectral power differences; and the JD786A tests up to 8 GHz.

**Benefits**

- Integrates spectrum, interference cable, and antenna analysis to comprehensively characterize the physical layer of a cell site
- Reduces maintenance time, performing standards-based RF measurements with only two keystrokes
- Quickly locates interference by instantly correlating three measurement points
- Tests up to 20 carriers in a single measurement with a configurable channel scanner
- Measures power on coaxial or fiber cables interfacing with RF or optical power sensors
- Quickly understand LTE-A performance with carrier aggregation, MIMO, and market-leading demodulation
- Nonintrusive PIM detection across the complete spectrum in a single instrument

**Applications**

- Use the spectrum analyzer to perform RF characterization of cell sites, including channel power, occupied bandwidth, adjacent channel leakage ratio, spectrum emission mask, and spurious emissions
- Use the interference analyzer’s spectrogram to identify intermittent interferers, use its RSSI to monitor up to six possible interferers simultaneously across time, and use its interference finder to identify the position of the interference through automatic triangulation
- Use the channel scanner to measure channel power of 20 carriers at any technology and frequency in a single test
- Performs as an RF and optical power meter with external power sensors
- Use the cable and antenna analysis to identify and locate reflections and to take two-port transmission measurements for insertion gain or loss tests that are ideal for isolating antennas, amplifiers, and filters
**Base Station Test continued**

*CellAdvisor JD748A/JD788A Signal Analyzers*

These analyzers are ideal test solutions for RF engineers because of their portability and superior performance analyzing cellular signals including GSM/GPRS/EDGE, CDMA/EV-DO, TD-SCDMA, WCDMA/HS-PDS, WiMAX-Mobile, LTE-FDD, LTE-TDD, and LTE-Advanced.

These signal analyzers integrate spectrum, interference, and signal analysis to perform RF characterization and assess the modulation quality of cellular signals.

**Benefits**

- Integrates spectrum, interference cable, and antenna analysis to comprehensively characterize the physical layer of a cell site
- Reduces maintenance time by completely assessing cellular signals, covering standards-based RF metrics and modulation-quality performance in less than 5 minutes
- Quickly locates interference by instantly correlating three measurement points
- Tests up to 20 carriers in a single measurement with a configurable channel scanner
- Measures power on coaxial or fiber cables interfacing with RF or optical power sensors
- Performs comprehensive signal analysis for a complete profile required for prompt troubleshooting and cell-site optimization
- Includes RF characterization and modulation quality performance as well as the monitoring and control of user channels
- Quickly conveys LTE-A performance with carrier aggregation, MIMO, and market-leading demodulation
- Nonintrusive PIM detection across the complete spectrum in a single instrument

**Applications**

- Dual spectrum and spectrogram measurements
- RCDE measurements
- Use the spectrum analyzer to perform RF characterization and spectrum clearance with its ability to record measurements over time
- Use the interference analyzer’s spectrogram to identify intermittent interferers, use its RSSI to monitor up to six possible interferers simultaneously across time, and use its interference finder to identify the position of the interference through automatic triangulation
- Use the channel scanner to measure channel power of 20 carriers at any technology and frequency in a single test
- Performs as an RF and optical power meter with external power sensors
- Use the signal analyzer to assess standards-based RF metrics and modulation-quality for any cellular technology, including GSM/GPRS/EDGE, CDMA/cdma2000/EV-DO, WCDMA/HS-PDS, TD-SCDMA, Mobile-WiMAX, LTE-TDD, and LTE-FDD
Base Station Test continued

**CellAdvisor JD745A/JD785A Base Station Analyzers**

These analyzers are ideal for verifying, installing, and maintaining cell sites. They integrate all the necessary measurements for testing base stations, including backhaul, radio performance, feed line, and air interface.


**Benefits**

- Performs spectrum, interference, signal, demodulation, and feed-line analysis in a single instrument
- Reduces maintenance time with a complete, automatic assessment of cellular signals
- Measures modulation-quality performance in under 5 minutes
- Quickly geolocates any interferer on a map
- Fast multicarrier testing: tests up to 20 carriers of any technology at different frequencies
- Quickly conveys LTE-A performance with carrier aggregation, MIMO, and market-leading demodulation
- Nonintrusive PIM detection across the complete spectrum in a single instrument

**Applications**

- Dual spectrum and spectrogram measurements
- RCDE measurements
- Use the interference analyzer’s spectrogram to identify intermittent interferers, use its RSSI to monitor up to six possible interferers simultaneously across time, and use its interference finder to identify the position of the interference through automatic triangulation
- Use the channel scanner to measure channel power of 20 carriers at any technology and frequency in a single test
- Performs as an RF and optical power meter with external power sensors
- Use the signal analyzer to assess standards-based RF metrics and modulation-quality of any cellular technology, including GSM/GPRS/EDGE, CDMA/cdma2000/EV-DO, WCDMA/HSDPA, TD-SCDMA, Mobile-WiMAX, LTE-TDD, and LTE-FDD
- Use the cable and antenna analysis to identify and locate reflections and to take two-port transmission measurements for insertion gain or loss tests that are ideal for isolating antennas, amplifiers, and filters
- Uniquely addresses new fiber-based cell sites with RFOCPRI technology
Network Protocol Test

**Signaling Analyzer Real Time (SART)**

SART increases the effectiveness of engineers who develop, plan, install, optimize, and troubleshoot complex mobile networks. The solution offers a breakthrough in troubleshooting methodology with a high-performance client-server, multi-user architecture and seamless drill-down from statistics and call-trace-to-message and decodes.

This solution allows complete and uniform testing of a network and individual call performance across all mobile network technologies and call types. This capability speeds and simplifies resolution of even the most complex interoperability problems in telephony.

SART is the test industry’s most complete, end-to-end analysis and troubleshooting solution for wireless networks, providing comprehensive monitoring and network diagnostics.

SART gives you:

- **Lower cost of ownership** — multi-user functionality enables high-performance, multiclient analysis by several clients in a single solution
- **Faster deployment and troubleshooting** — supports 2/2.5/3/4G technologies with graphical call trace, statistics, and KPIs to visualize a variety of information elements and the performance of the network
- **Quick problem isolation with just three clicks** of the mouse — SART is an efficient troubleshooting application that helps customers find network problems and service degradations with just three clicks of the mouse
- **Multitechnology-ready solution** — with a uniform application framework for all technology needs within both the engineering and operations organizations, saves customers up-front costs through the technology evolution to realize significant and continual OpEx savings

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**Benefits**

- Analyzes and measures real-time performance against KPIs
- Intelligent hardware probes can be distributed anywhere in the network and do much of the processing
- Multi-user access enables parallel testing and test infrastructure sharing to reduce time-to-test and time-to-market
- A robust applications programming interface enables workflow automation, which speeds deployment and reduces time-to-revenue and operating costs
- An industry-unique, patented Call Trace feature lets engineers quickly visualize the network’s state and then drill down to examine certain procedures
- Reduces time-to-repair in complex access and services networks with detailed historical and forensic analysis capabilities on 10 G

**Features**

- Signaling and user plane
- IMS and VoLTE troubleshooting

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SART can decipher LTE user plane in real time by dynamically capturing keys and correlating call legs generating a complete call flow.

SART correlates LTE and IMS calls showing an end-to-end call flow for both technologies which can also include voice quality metrics.

In conjunction with PacketInsight, SART can be used to isolate problem calls and capture all related traffic that can be used for immediate or historical troubleshooting. PacketInsight is used to capture user plane for any desired calls creating a complete user and control plane capture for calls of interest.
PacketInsight™

PacketInsight is a next-generation network monitoring and troubleshooting solution that quickly and precisely identifies service-affecting network issues in combination with the SART monitoring tool. Reviewing an abundance of stored network data is often required to identify and resolve network problems. Sifting through terabytes of stored data can often take days. Unlike other solutions available on the market, PacketInsight rapidly rewinds to points in time on the network to pinpoint quality-impairment issues.

Providing the fastest retrieval in the industry while capturing wireless traffic at rates approaching 40 G, PacketInsight gets meaningful results faster than other solutions. Wireless service providers and equipment manufacturers alike can easily rewind to a specific network time frame, eliminating the need to reproduce service issues and saving time from using traditional practices.

PacketInsight leverages industry-leading JDSU wireless network experience with troubleshooting wireless networks on signaling as well as voice, video, and other application-level issues.

Traditional wireless network monitoring methods will not scale to accommodate growing demand because of limited network traffic analysis that requires service providers to recreate customer issues in order to troubleshoot them. PacketInsight breaks the mold by giving providers a revolutionary new way to optimize wireless network performance while offering lightning-fast troubleshooting capabilities.

PacketInsight resolves wireless network issues in three easy steps:

1. Isolate the time frame and affected user(s) with industry-leading, flexible wireless search criteria.

2. Drill down on the issue to retrieve data in seconds.

3. Use industry-leading JDSU analytics or third-party applications.
**CapacityAdvisor**

**Measuring User Experience with Real-World Traffic Generation**

Research shows that an operator’s network quality issues—challenges with coverage, capacity, and performance—are directly load related. And, as data growth increases exponentially, global signaling is growing even faster: by 30 to 50 percent.

The CapacityAdvisor product family provides advanced load and call-model generation for 3G and 4G networks, giving operators an unmatched ability to test equipment and services under realistic traffic models prior to launch. With the CapacityAdvisor, operators can optimize network performance and ensure the best possible end-user experience.

The CapacityAdvisor solution helps bring new products and services to market faster with better quality, reduced costs, and less risk.

**Benefits**
- Validates hardware and software upgrades
- Recreates live network conditions on demand for faster troubleshooting
- Accelerates network life-cycle testing
- Speeds time to revenue
- Reduces test cycle time
- Yields repeatable, deterministic test behavior
- Discovers defects prior to deployment
- Improves end-user quality of experience
- Verifies NEM claims/promises

**Features**
- Tests LTE, UMTS/HSPA, and EV-DO with one platform
- Tests VoLTE performance and quality
- Measures RF-sector performance with an end-to-end context
- Validates constantly changing call-profile impact on the network
- Tests RAN-optimization features from NEMs
- Quickly validates NEM releases before going live
- Provides feature testing in context of load

**Applications**
- Risk Management provides an insurance policy against issues in the field
- Vendor Product Evaluation determines what happens under load before your customer does
- Multi-Vendor Interop defines repeatable tests to determine overload conditions across the whole network
- Technology Evaluation reliably tests new equipment and software releases before going live
- Benchmark all systems with repeatable performance tests
- Network Service Trials lower costs and maximize the use of network equipment by identifying overload points
- Problem Resolution reliably recreates to resolve problems faster
Mobile Service Enablement

xSIGHT Customer Experience Assurance

The xSIGHT Customer Experience Assurance (CEA) solution introduces a fundamentally different approach to assurance that enables a real and relevant improvement in customer experience, while maximizing productivity and profitability in dynamic, converged 4G/LTE networks and beyond. The solution, powered by the xSIGHT real-time intelligence (RTI) platform and analytics portfolio, lets mobile operators:

- Proactively identify and resolve performance problems having the greatest impact on customer experience in a fraction of the time of existing solutions
- Break the big data cost curve with substantial CapEx/OpEx, footprint, and scalability improvements
- Integrate and correlate data from any source to any application for deep end-to-end visibility, reduced OSS costs, and data monetization
- Enable dynamic network and service assurance with virtualization-ready, real-time intelligence

xSIGHT Customer Experience Assurance is delivered through the xSIGHT analytics portal and RTI platform. The xSIGHT analytics portal gives system users cloud-based access to powerful analytical applications, xSIGHT CEA, xSIGHT Performance Explorer (PE), and xSIGHT Diagnostics. The xSIGHT RTI platform delivers enriched visibility across the entire service path through data access agents (a family of flexible traffic analysis/storage and data collection agents that can capture the required assurance data from a broad variety of sources), feeding carrier-grade data mediation, correlation, and policy management. The xSIGHT RTI platform is fully open and feeds enriched, actionable data to xSIGHT analytics and third-party applications for value-added insight.

Benefits
- Increase existing revenues from higher service uptime
- Enable new revenue streams from data monetization
- Reduce customer churn via increased satisfaction levels
- Reduce OpEx via increased productivity and OSS rationalization
- Reduce CapEx via lower solution costs

Features
- Real-time multi-dimensional performance analysis, for example, by location, OTT app, or device
- Insightful alerts based on hierarchical alarm definition and reporting
- Accurate problem prioritization based on customer and revenue impact analysis
- Streamlined, lower-cost, KPI generation process with same visibility
- Faster, lower-skilled problem diagnosis via (KPI) metric-guided troubleshooting
- On-demand, lower-cost, transaction-tracing process with the same diagnosis power
- Data integration from a variety of (JDSU or non-JDSU) data sources and OSSs

Applications
- Network, service, and customer problem detection and prioritization
- Network, service, and customer problem diagnosis and resolution
- Enriched assurance data feed to third-party applications and OSSs
xSIGHT Applications and Platform

Customer Experience Assurance Application

The xSIGHT CEA application monitors performance (and raises associated alarms) in real time, correlating the customer experience with network and service performance. It ensures that the top issues impacting subscribers are identified, prioritized, and resolved quickly and efficiently.

Features

- SMARTmetrics™ provide a normalized indication of customer experience
- Insightful tree maps highlight both performance status and impacted population size
- Data is auto-filtered during KPI drill-down based on user-selected dimension value
- Hierarchical performance alarms and/or charts defined via a simple built-in GUI editor
- Able to auto-launch the xSIGHT Diagnostic application

Performance Explorer Application

The xSIGHT Performance Explorer application provides detailed analysis of network and service performance based on measurements and dimensions that the user defines. It enables users to quickly and efficiently perform very focused investigations of network and service performance.

Features

- Time analysis of KPI values, failure code distribution, and number of failures by cause type
- User-selected dimension values (from filter lists) and analyzed time intervals
- Data is auto-filtered during KPI drill-down based on user-selected dimension values
- Able to auto-launch the xSIGHT Diagnostic application

Diagnostics Application

The xSIGHT Diagnostics application provides in-depth fault troubleshooting via the detailed tracing of protocol transactions associated with an individual call or data session.

Features

- Auto-identify all related protocol transactions for a single call or session
- Flexible search criteria to quickly identify and retrieve required call or session data
- xDRs and traces are only built as required
- Color coding highlights potential issues
- Auto-launch from the xSIGHT CEA application

xSIGHT Real-Time Intelligence Platform

The xSIGHT RTI platform delivers visibility across the entire service path through data access agents (a family of flexible traffic analysis/storage and data collection agents that can capture the required assurance data from a broad variety of sources), carrier-grade data mediation, correlation, and policy management. The xSIGHT RTI platform is fully open and feeds enriched, actionable data to xSIGHT analytics and third-party applications for value-added insight.

Features

- Memory-based architecture enabling real-time multi-dimensional performance analysis.
- Supports end-user application-, device-, and location-aware performance analysis.
- Streamlined, lower-cost processes for KPI generation and transaction-tracing troubleshooting.
- Fully open architecture for accessing data from any source and supplying analysis to any JDSU or third-party application.
- An architecture suitable for use in a virtualized network environment (for example, NFV).
Service Activation and Troubleshooting

**T-BERD®/MTS-6000A, -8000 Multi-Service Application Module (MSAM)**

The T-BERD/MTS-6000A Multi-Service Application Module (MSAM), the industry’s most complete multitechnology service activation and troubleshooting test tool, continues to dominate the installation and troubleshooting market with its evolutionary hardware design that addresses the challenges of converged IP networks with ever-growing 10 G core and access networks. It aids in service activation and troubleshooting of mobile backhaul networks with a robust suite of Ethernet, IP, TCP, and VoIP tests that ensure high quality customer experience. Its network synchronization testing capabilities and its support for CPRI/OBSAI are perfectly suited for mobile fronthaul and backhaul testing for LTE, small-cell, and macrocell rollouts.

**Benefits**

- Seamlessly expands into future technologies and interfaces
- Leads the industry in network field installation and advanced troubleshooting
- Guarantees end-customer satisfaction with deep application-layer testing for data, voice, and video
- Speeds service activation and troubleshooting with TrueSAM™ and J-Complete™
- Modular and field upgradeable
- Checks remote radio head (RRH) health without climbing the tower with CPRI/OBSAI tests
- Reduces dropped calls due to timing issues with network synchronization tests

**Applications**

- Tests and troubleshoots converged Ethernet/IP networks with 10 Mbps to 10 G interfaces
- Tests TDM/PDH from DS1/E1 to OC-192/STM-64, including service disruption measurements and path overhead (POH) capture with triggers
- Helps install and maintain OTN networks (up to 11.1 Gbps interfaces) with ODU-0/ODUFlex support for Ethernet/IP client interfaces
- Supports all CPRI and OBSAI line rates with RRH and BBU interface test
- Verifies network synchronization
- Supports SFP and XFP pluggable optics, including 50 GHz C-band tunable XFPs

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**Frost & Sullivan**

2012 Best Practices Award

Global Ethernet Test Equipment Growth Leadership Award
Service Activation and Troubleshooting continued

T-BERD/MTS-5800 Handheld Network Tester

This tester addresses the challenges of carrier Ethernet evolution. It supports both legacy and emerging technologies required to handle various network applications including metro/core, mobile backhaul, and business services installations.

The industry’s smallest handheld instrument supports testing throughout the entire service life cycle, including service activation, troubleshooting, and maintenance. Integrated J-Complete functionality, such as capture/decode and automated J-Mentor, guides field technicians through troubleshooting without carrying a separate analyzer instrument.

The T-BERD/MTS-5800 ensures successful mobile backhaul transitions by validating both Ethernet backhaul synchronization (1588v2 and SyncE) and front haul (CPRI/OBSAI) BER and delay to guarantee successful mobile handoff between cell sites, thereby avoiding service degradation.

Benefits

- All-in-one handheld tool simplifies multitechnology testing
- One tool combines OTDR and network test functionality to support the complete base station life cycle
- Optimized for easy field use and addresses emerging network technologies
- Guarantees maximum efficiency and success in evolving mobile backhaul networks
- Accelerates Ethernet service activation and troubleshooting with rich test features, automated workflows, and easily interpreted results
- Quickly checks RRH health without climbing the tower with CPRI/OBSAI tests
- Reduces dropped calls due to timing issues with network synchronization tests

Applications

- Tests and troubleshoots converged Ethernet/IP networks with 10 Mbps to 10 G interfaces
- Tests TDM/PDH from DS1/E1 to OC-192/STM-64, including service disruption measurements and path overhead (POH) capture with triggers
- Helps install and maintain OTN networks (up to 11.1 Gbps interfaces) with ODU-0/ODUFlex support for Ethernet/IP client interfaces
- Supports all CPRI and OBSAI line rates with RRHand BBU interface test
- Verifies network synchronization
- Supports SFP+ pluggable optics, including C-band tunable optics
- Integrated OTDR for FTTA, DAS, and RAN fiber installation and maintenance
Fiber Optic Test and Inspection

**T-BERD/MTS-2000 Fiber Platform—An OTDR for Any Level Technician**

The JDSU T-BERD/MTS-2000 is a simple, compact, upgradable OTDR test solution dedicated to installing and troubleshooting optical fiber across premises, fiber-to-the antenna (FTTA), and small cell, DAS, cloud-RAN networks.

Front line cell-tower technicians who are traditionally skilled in RF network installation must now qualify or troubleshoot fiber installations using an OTDR, which can be challenging because an OTDR is complex to operate and its measurement results are difficult to interpret. However, the T-BERD/MTS OTDR platform’s FTTA-SLM application software feature simplifies OTDR testing for cell-tower technicians.

The SmartConfig feature guarantees accurate, consistent, and repeatable results every time regardless of the technician’s skill level, and it eliminates setup errors requiring fiber re-tests and truck re-rolls, ensuring the job is done right—the first time.

**Benefits**

- Qualifies installation acceptance quality to provide confidence in fiber-network performance
- Streamlined display interface shows setup, test, storage, and results data on one screen for simplified fiber installation and fault location
- Predefined SmartConfig™ eliminates complex OTDR setup errors
- Light, compact, hands-free design optimizes productivity for tasks up poles or down holes
- Empowers field technicians to diagnose OTDR fiber test results using a simple schematic map, making them instant fiber experts
- Enhances field productivity by testing twice as fast and more reliably than a standard OTDR

**Applications**

- Troubleshooting FTTA front haul
- Fiber installation, maintenance, and troubleshooting in FTTA, DAS, cloud RAN, and mobile backhaul networks
- Test single-mode or multimode optical fibers in cell towers and rooftop sites
- Pass/fail fiber connector certification

**SmartClass™ Fiber OLP-82 Power Meter and Microscope**

The #1 cause for troubleshooting in fiber networks is contaminated connectors. To address this problem, the International Electrotechnical Commission (IEC) has developed a standard for acceptable fiber connector end face quality. The OLP-82 and the P5000i probe microscope enable the inspection certification of fiber connectors according to industry standards and specifications.

The OLP-82 also combines pass/fail fiber inspection and optical power measurement (OPM) in one solution. As part of the JDSU SmartClass Fiber family, the OLP-82 helps service providers guarantee a lifetime of system performance from their network connectivity and gives contractors an essential tool for delivering best-in-class reliable networks to their customers.

The OLP-82 is ideal for technicians at any skill level with instant pass/fail acceptance results for both end-face quality and OPM in one button push. The OLP-82 can also save test results and generate certification reports to document work quality. Integrating these capabilities into one system helps the OLP-82 drive technician behavior toward implementing today’s best practices in a seamless workflow that optimizes efficiency and reliability so they complete the job right—the first time.

**Benefits**

- Lets users complete jobs faster, correctly, and on time—the first time
- Uniquely integrates fiber inspection and test for an efficient, easy-to-use solution that promotes best practices for handling fiber
- Conducts analysis with pass/fail results on one handheld device
- Automatically and easily certifies fiber end-face condition and measures optical power, making even new technicians fiber experts
- Easily generates fiber certification acceptance test reports
- Proves that work quality meets industry standards and customer specifications
- A portable, organized, hands-free carrier for easy use inside homes, at demarcation points, and up telephone poles and cell towers

**Features**

- Field-portable OPM with multiple calibrated wavelengths from 780 to 1625 nm
- Automated pass/fail analysis for fiber inspection and test
- Supports both industry-standard and user-definable acceptance criteria
- Available with an integrated PCM
- Stores fiber inspection and test reports onboard
- Automatic fiber-image centering
- Modern, smartphone-style user interface with touch screen
- Rugged, weatherproof design

**Applications**

- Install, maintain, and troubleshoot fiber in FTTA, DAS, cloud RAN, and mobile backhaul networks
Fiber Optic Test and Inspection continued

**P5000i Multi-Platform Digital Fiber Microscope**

The #1 cause for troubleshooting in optical networks is contaminated fiber connectors. To address this problem, the IEC has developed a standard for acceptable fiber end-face quality. Certifying compliance to this standard can be a time-consuming, complex, and subjective procedure.

The P5000i is a digital handheld microscope that automatically inspects and certifies the end faces of fiber connectors according to industry standards and specifications. This digital microscope provides instant pass/fail results at the push of a button, eliminating subjective and time-consuming guesswork.

Compatible with multiple platforms, including the T-BERD/MTS-2000/4000/5800/6000A, HST-3000, Android devices, and laptop/PCs, the P5000i provides fast, repeatable analysis that easily integrates into existing test procedures. The world’s leading manufacturers, installers, and service providers already rely on JDSU to certify their fiber connectors. Whether tested on the production line or in the field, the P5000i gives any technician that handles fiber the same capability in the palm of their hand.

### Benefits

- Inspects and certifies fiber endface quality at the push of a button, making your technicians instant fiber experts
- Ensures physical layer performance by guaranteeing fiber connectivity meets industry standards
- Eliminates confusion with fast, easy, and objective testing
- Uses an intelligent scope to certify fiber end-face quality with your existing JDSU test platform
- Lets technicians get it right the first time, drives best practices, improves work quality, and optimizes their workflow
- Ensures lifetime connections and protects network investments by preventing damage to fiber components and equipment

### Applications

- Repeatable pass/fail analysis eliminates subjective guesswork from the measurement process
- User-selectable acceptance profiles allow certification to any acceptance criteria
- Includes FiberChekPRO™ software for analysis and reporting with PC/laptop
- Automatic image centering ensures the fiber is always in the center of the screen
- Detailed report generation to certify and document results
- Dual magnification (200x and 400x) functionality provides high-level and detailed inspection and analysis
- Magnification button lets users toggle between live and analysis views
- Accepts FBPT-series tips for comprehensive support for all connector types used in today’s networks
- Ergonomic focus control wheel lets users optimize focus quality with precision and ease
Location Intelligence

ariesoGEO™

The world’s leading enterprise geolocation solution, ariesoGEO, uses data already present in the radio access network to collect, analyze, and geolocate details from every customer call or data connection. This store of location intelligence is then available for analysis by powerful ariesoGEO applications.

As the smartphone revolution continues to stretch networks to the breaking point, ariesoGEO transforms radio access network performance engineering, focusing on those improvements which will have greatest impact on customer experience. As operators look to serve ever-growing data capacity demands by deploying LTE expansions, small cells, and data offload solutions, it gives planners unprecedented insight into traffic patterns and usage by key groups of subscribers. By letting them locate the most-appropriate capacity solutions with surgical precision, ariesoGEO ensures operators derive maximum business benefit from these investments.

ariesoGEO is at the forefront of geolocation technology, supporting the widest range of network equipment vendors and technologies in the industry. Looking beyond initial LTE rollouts toward ensuring that these networks deliver on their promised customer experience, ariesoGEO provides engineers the insight they need to maximize performance. Many of the world’s leading operators use ariesoGEO to maximize their returns from innovative solutions such as small cells and WiFi offload as they address data capacity challenges.

With the promise of self-organizing networks (SON) becoming a reality, ariesoGEO brings a location-aware approach to automatically deliver game-changing performance and the ultimate customer experience.

ariesoGEO Applications

A portfolio of powerful ariesoGEO applications let operators maximize the value of geolocated, customer-generated intelligence.

GEOplatform

At the heart of ariesoGEO is the GEOplatform, which connects to the network OSS to collect customer-generated trace data. Using patented methods, billions of events per day are geolocated, analyzed, and loaded into the intelligence store.

GEOplatform supports the widest range of infrastructure vendors and cellular technologies in the industry, with support for GSM, UMTS, LTE, and now WiFi and Femto. A key feature of this multitechnology support is that the data is available in a single unified data structure, enabling ariesoGEO applications to be truly customer centric and perform analytics that span technology layers, identifying the complete customer experience regardless of the access technology in use at the time.

The platform leads the industry in terms of scalability and efficiency. It runs on commodity servers, with horizontal scalability designed in from the outset.

GEOperformance

GEOperformance uses location intelligence to transform RAN planning and performance engineering to enhance operational efficiency and significantly increase return on investment. It provides all this while delivering game-changing improvements in network performance actually experienced by customers.

Because of its unique ability to collect data from all calls and connections on a 24/7 network-wide basis, ariesoGEO can provide unmatched insight into network behavior that cannot be studied in other ways. This lets engineers resolve long-standing challenges and deliver unprecedented network performance.

Benefits

- Harnesses the power of geolocated, customer-generated intelligence
- Improves RAN performance engineering — halves the time to solve network problems, focusing valuable drive-test resource on key issues and solving complex problems within hours
- Improves RAN planning — enables precise placement of new infrastructure and small cells, delivering 2.8x ROI
- Supports 2/3/4G technologies from a single platform for every call and data connection made in the network
- Identifies where customers are, their services and handsets, and the quality they experience, using data already available in the network
- Provides a deeper understanding of key customer experience, troubleshooting real calls and enabling responses within hours

Applications

- Customer-centric performance engineering and optimization
- Precision small-cell deployment
- VIP/corporate customer assurance
- Customer care
- Location-insight services
Location Intelligence continued

ariesoGEO Applications continued

GEOson
GEOson brings the power of location intelligence to automated network performance improvements—delivering significant cost savings, improved customer experience levels, and transforming network performance beyond manual means.

Fundamental to the quality of output from any automated system is the quality of input. Extensive experience with tier-1 global operators has shown that the location intelligence stored within ariesoGEO is the best source of information to use when optimizing networks for ultimate customer experience. This remains true for an automated SON solution.

GEOinsights
As mobile operators look to harness customer data within their networks, both to optimize their own businesses and create new business models and revenue streams, GEOinsights unlocks the power of location intelligence within the ariesoGEO platform.

The powerful GEOinsights data feed transforms detailed connection-centric data within the ariesoGEO platform into an anonymized, aggregated feed of insights about places, people, and time. This information is ready to be shared with external systems and can be integrated with data warehouses using straightforward and cost-effective techniques. In many cases, the intelligence from GEOinsights can be used directly with business intelligence solutions.

As well as letting operators optimize their businesses through techniques such as geomarketing, GEOinsights enables new revenue streams through data monetization. Leading operators around the world are exploring how the unique customer behavior information they hold can be harnessed to deliver value to other business segments.

GEOanalytics
GEOanalytics is a sophisticated data feed that lets third-party applications make direct use of the location intelligence held within the GEO platform. While there may be several sources of customer experience data available within the network, actually getting access can be very challenging. With GEOanalytics, powerful customer experience intelligence, with the additional dimension of building-level resolution location information, is made available in a form that can be used directly by third-party applications.

The power of location intelligence in numerous customer care and quality assurance applications has already been proven. GEOanalytics ensures this value is realized efficiently in wider applications across the enterprise.

Contact your local JDSU salesperson or visit us at www.jdsu.com/go/mobile for more information.