Agilent OPAS32 Engineering Information Management and Analysis Software

Product Overview





The leader in wireless network analysis software

Maintaining a competitive edge in today's dynamic wireless marketplace requires a systematic approach to optimizing wireless networks. By looking at the big picture of network performance, problems can be precisely identified and effective remedies can be implemented. Consistent network analysis enables pro-active strategies that can help prevent problems before they occur. OPAS32 software from Agilent Technologies is a powerful engineering information management and analysis solution adopted by many wireless operators worldwide. It provides the flexibility to focus on specific network issues and automates repetitive tasks for rapid results. This allows managers, engineers and technicians to make immediate and accurate diagnoses of network problems. Ultimately, OPAS32 is a key instrument in maximizing network profitability.

Identify network problems

OPAS32 helps wireless network operators achieve and maintain optimum network performance. An easy-to-use interface combined with the ability to analyze vast quantities of data collected by a wide range of measurement tools makes network analysis more efficient than ever before. Utilizing information collected both on the forward and reverse paths, RF engineers can easily identify and correct network performance problems. Built on an open architecture, OPAS32 accommodates data sets from many different data collection tools. Analysis "wizards" automate repetitive tasks and pinpoint precise trouble spots in the wireless network to dramatically reduce optimization time and expense.



Integrates tightly with RF planning tools like WIZARD and CellOpt AFP

Optimize network performance

The powerful GIS engine of OPAS32 enables synchronized viewing of maps, messaging and signal parameters. With this engine, trouble areas can easily be identified and corrective actions can be planned.

- Analyzes throughput, round trip delay, transfer errors and other key data networking parameters.
- Provides technologyindependent benchmarking for QoS parameters, including voice and data quality.
- Easily identifies dropped calls, blocked calls and hand off failures that cause network problems.



User-customizable exception reporting



Fastest GIS engine available with replay capability: • supports ETAK, Mapinfo, satellite image,

- bitmaps and other underlays
- supports all datums and projections



User-customizable report generation interfaces with standard office packages and the web

Check out your competition

Ideal either for network optimization or benchmarking, OPAS32 helps you accurately locate trouble spots, plan expansion, evaluate new technologies and analyze how your network changes over time. It can be used to compare the performance of competitors' networks to your own.

- Automatically generates accurate Mean Opinion Score (MOS) for both forward and reverse links.
- Analyzes all underlying RF engineering data for detailed troubleshooting.
- One-click reports automatically create detailed engineering and management reports.
- Simplifies data analysis users can view data in map, table or graphic displays.
- Matches call metrics to locations with pinpoint accuracy using sophisticated navigation and a unique route mapping system.
- Assesses competing carriers, technologies or other data quickly and cost effectively.

All major parameters can be plotted geographically to identify important trends. These plots enable you to visually compare your performance against competitors in key areas.



Full Layer 2 and Layer 3 decoding for digital technologies



Single platform for voice and data networks



Supports open architecture standard file formats:

- all major 3rd party data collection tools
- switch data for all technologies
- abis data

CDMA and cdma2000 technology

Pilot analyzer One-button analysis for CDMA PN scanner users

OPAS32 provides the ability to map, graph, analyze, report, and provide statistical analysis on all collected and imported CDMA phone and scanner or receiver data.¹ In addition to these powerful display and reporting features, OPAS32 provides specialized one button analysis of scanner or receiver data in the form of the PN Analyzer. This feature allows engineers to get to the root of network RF problems.

CDMA network operators can use the Pilot Analyzer application to instantly map key PN scanner data parameters. This map helps to identify coverage and pilot pollution problems in the network for both server and sector levels. Analyses include:

- **Pilots Above TAdd** Identifies areas that have PN pollution (i.e., typical CDMA networks with more than three pilots above threshold).
- **Best Server Ec/Io** Determines the severity of PN pollution when used in conjunction with Pilots Above TAdd display.
- **Best Server Power** Determines areas with problems such as inadequate coverage.
- **Best Server Sector** Shows the PN number of the best serving sector at each point along the entire drive.
- PN Coverage Ec/Io Shows Ec/Io values in dB for only those points in a test run that come from a specific PN offset only where the PN is user specified through selecting a sector on the map or listing the PN of interest.



With one click, the Pilot Analyzer can plot out the number of Pilots Above TAdd. During replay, the Info Window for CDMA Power identified a location with four PNs above the TAdd value. OPAS32 also can display multiple data layers (three are shown here) to visually help the user spot areas of concern.

- **PN Coverage Power** Shows power (Ec) values in dBm for only those points in a test run that come from a specific PN offset only where the PN is user specified through selecting a sector on the map or listing the PN of interest.
- **PN Coverage Sector** Shows the best server for a sector. It shows the PN number for a specific PN offset only - for areas where the selected PN is the strongest PN.

The Pilot Analyzer application is included with OPAS32 and is also available as a stand-alone tool for use with Agilent Technologies, Hewlett-Packard and Berkeley Varitronics Systems PN scanners.

Missing Neighbor Analysis

In addition to the PN Analysis feature, OPAS32 includes a "Plug-In Analysis" to perform missing neighbor analysis for the Agilent E6474A Wireless Network Optimization Platform. Using the missing neighbor analysis allows engineers to compare phone and scanner data to evaluate areas of the network where a strong PN has been left off the neighbors list.

Complete CDMA Analysis

OPAS32 provides the most complete set of RF analysis for cdma technology. With specific CDMA analysis such as the PN Analyzer and the Missing Neighbor Analysis, and a variety of other CDMA and platform features such as Boolean analysis, exception reporting, histograms, and terrain profiling, OPAS32 can help engineers solve network problems in addition to finding them.

¹ For the tools supported by OPAS32. ASCII data from other tools can also be imported into OPAS32.

Data test for cdma2000

Analyze,optimize and post process cdma2000 voice, RLP, application layer, and IP layer data

OPAS32 enables users to analyze quality of service and throughput problems associated with cdma2000 voice, cdma2000 RLP, IP layer, and application layer measurements.

In addition to IP layer and application layer data test analysis, OPAS32 provides support for RLP statistics, fundamental and supplemental channel information, and RC information.

Simultaneously analyzing cdma2000 voice, RLP and data test measurements in OPAS32 allows engineers to:

- quantify quality of service
- get a user's point of view of network performance and data throughput
- evaluate Layer 3 messaging between the base station and mobile station
- determine where in the stack network problems exist (RF layer or IT infrastructure)

Typical measurement parameters that are available for cdma2000 analysis include:

- RLP parameters such as RLP round trip time, number of received frames that have been retransmitted, number of transmit frames that have been retransmitted, NAK aborts, and bytes transmitted and received
- amount of bandwidth allocated such as radio configuration number and number of SCH channels used
- protocol message decodes

In addition to the above analysis, information on IP layer and application layer analysis can be found on page 11. cdma2000 operators can map, graph, report and analyze generic data measurements such as IP layer throughput and BER, IP packet loss, packet round trip delay, and packet one way delay. When used in conjunction with cdma2000 voice and RLP analysis, these analyses provide a complete picture of cdma2000 network performance.



Analyze CDMA2000 RF, RLP and IP data test measurements simultaneously.

GSM and GPRS technology GSM analysis

One button analysis for GSM scanner users

OPAS32 provides the ability to map, graph, analyze, report, and provide statistical analysis on all collected and imported GSM phone and scanner or receiver data.¹ In addition to these powerful display and reporting features, OPAS32 provides specialized one button analysis of scanner data in the form of the GSM Analyzer.

GSM network operators can use the GSM Analysis application to instantly map key GSM scanner data parameters. This map helps to identify coverage and problems in the network for both server and sector levels.

Analyses include:

- **Best Server Signal** Shows the signal level for the Nth strongest server at each point in the collected test run. The Nth strongest server can be changed from the strongest server to the 20th strongest server.
- **Best Server Sector** Shows the channel number (ARFCN, i.e., the BCH number), of the best serving sector for each point in the collected test run.
- **GSM Coverage Signal** Shows the signal strength data in dBm for only those points in the test run that come from a specific cell site sector only (BCH) - where the sector (BCH) is user specified through selecting a sector on the map or listing the channel of interest.

• **GSM Coverage Sector** Shows the channel number for only those points in the test run that come from a specific cell site sector only (BCH) - where the sector (BCH) is user specified through selecting a sector on the map or listing the channel of interest.

Missing Neighbor Analysis

In addition to the GSM analysis feature, OPAS32 includes a "Plug-In Analysis" to perform missing neighbor analysis for the Agilent E6474A Wireless Network Optimization Platform drive test solutions. Using the missing neighbor analysis allows engineers to compare phone and scanner data to evaluate areas of the network where strong GSM channels have been left off the neighbors list.

Complete GSM and GPRS Analysis

OPAS32 provides the most complete set of RF analysis for GSM and GPRS technology. With specific GSM analysis such as the GSM Analyzer and the Missing Neighbor Analysis, and a variety of other GSM and platform features such as Boolean Analysis, Exception Reporting, histograms, and terrain profiling, OPAS32 can help engineers solve network problems in addition to finding them.



Evaluate GSM Layer 1 and GPRS layers simultaneously

¹ For the tools supported by OPAS32. ASCII data from other tools can also be imported into OPAS32.

Data test for GPRS

Analyze, optimize, and post process: application layer, IP layer data, and RLC/MAC layer

OPAS32 enables users to analyze effects of time slot and coding scheme allocation on the quality of service parameters.

Analyzing GPRS parameters and data in OPAS32 allows engineers to:

- quantify quality of service
- get a users point of view of network performance and data throughput
- evaluate Layer 3 messaging between the base station and mobile station
- determine where in the stack network problems exist (RF layer, or IT infrastructure)

Typical measurement parameters that are available for GPRS analysis include:

- GMM / SM data such as the MCC, LAC, and RAC
- LCC / SNDCP data such as LCC mode and SNDCP header and data compression
- RLC / MAC parameters such as resource allocation type, C value and timeslot allocation, coding schemes, TBF status and TFI on both uplink and downlink
- quality of service parameters such as uplink and downlink LLC and RLC throughput and retry rate % and downlink RLC BLER %
- protocol message decodes

GPRS operators can map, graph, report, and analyze generic data measurements such as application layer throughput, IP layer throughput and BER, IP packet loss, packet round trip delay, and packet one way delay.

For more information on generic GPRS data test for application layer and IP layer data within OPAS32, see the section on IP Data Test Analysis on page 11.

For additional information on GPRS measurements see *Agilent E7478A GPRS Drive Test System Data Sheet* (literature number 5988-1506EN).



Analyze application layer, IP layer and RF parameters in one package to understand end to end network problems

iDEN technology iDEN analysis

One button analysis for iDEN scanner users

OPAS32 provides the ability to map, graph, analyze, report, and provide statistical analysis on all collected and imported iDEN phone and scanner data.¹ In addition to these powerful display and reporting features, OPAS32 provides specialized one button analysis of scanner data in the form of the iDEN Analyzer.

iDEN network operators can use the iDEN Analysis application to instantly map key iDEN scanner data parameters. This map helps to identify coverage and problems in the network for both server and sector levels. Analyses include:

- **Best Server Signal** Shows the signal level for the Nth strongest server at each point in the collected test run. The Nth strongest server can be changed from the strongest server to the 20th strongest server.
- **Best Server Sector** Shows the channel number of the best serving sector for each point in the collected test run.
- **iDEN Coverage Signal** Shows the signal strength data in dBm for only those points in the test run that come from a specific cell site sector only - where the sector is user specified through selecting a sector on the map or listing the channel of interest.
- **iDEN Coverage Sector** Shows the Channel number for only those points in the test run that come from a

specific cell site sector only where the sector is user specified through selecting a sector on the map or listing the channel of interest.

Complete iDEN analysis

OPAS32 provides the most complete set of RF analysis for iDEN technology. With specific iDEN analysis such as the iDEN Analyzer and a variety of other iDEN and platform features such as Boolean analysis, exception reporting, histograms, and terrain profiling, OPAS32 can help engineers solve network problems in addition to finding them.

¹ For the tools supported by OPAS32. ASCII data from other tools can also be imported into OPAS32.

UMTS (W-CDMA) technology UMTS analysis

One button analysis for UMTS scanner users

OPAS32 provides the ability to map, graph, analyze, report and provide statistical analysis on all collected and imported Agilent UMTS receiver data. In addition to these powerful display and reporting features, OPAS32 provides specialized one button analysis of receiver data in the form of the scrambling code analyzer. This feature allows engineers to get to the root of network RF problems.

UMTS network operators can use the scrambling code analysis application to instantly map key UMTS receiver data parameters such as the best serving scrambling code. This map helps to identify coverage and interference problems in the network for both server and sector levels.

Analyses includes:

- Scrambling Codes Above Specified Threshold Identifies areas that have scrambling code collisions or pollution.
- **Best Server Ec/Io** Determines the severity of scrambling code pollution when used in conjunction with the scrambling codes above Tadd display.
- **Best Server Sector** Shows the scrambling code of the best serving sector at each point along the entire drive

Scrambling Code Coverage Ec/Io Shows Ec/Io values in

Shows Ec/Io values in dB for those points in a test run that come from a specific scrambling code only - where the scrambling code is user specified through selecting a sector on the map or listing the scrambling code of interest.

Scrambling Code
Coverage Power
Shows power (Ec) values in
dPm for these points in a to

dBm for those points in a test run that come from a specific scrambling code only - where the scrambling code is user specified through selecting a sector on the map or listing the scrambling code of interest.

Scrambling Code Coverage Sector Shows the best server for a sector. It shows the sectors (by displaying the scrambling code number) where the selected scrambling code is the strongest.

Complete UMTS analysis

OPAS32 provides the most complete set of RF receiver analysis for UMTS technology. With specific UMTS analysis such as the UMTS Analyzer and a variety of other platform features such as Boolean analysis, exception reporting, histograms and terrain profiling, OPAS32 can help engineers solve network problems in addition to finding them.

In addition to specific UMTS analysis, some typical measurement parameters that are available for analysis include:

- Scrambling Code Peak Ec
- Scrambling Code Peak Ec/Io
- Scrambling Code Aggregate Ec
- Scrambling Code Delay Spread
- Scrambling Code -Aggregate Peak
- Scrambling Code Relative Time

The above measurements are available per collected scrambling code for the drive test application.



Use the SC analyzer to simultaneously view coverage from a specific scrambling code for all points and for when it is only the best server

TDMA technology

OPAS32 provides the ability to map, graph, analyze, report and provide statistical analysis on all collected and imported TDMA phone and receiver data.¹ In addition to these powerful display and reporting features, OPAS32 provides specialized exception reporting that can trigger new reports based on specified Boolean conditions. This feature allows engineers to get to the root of network RF problems.

Some typical measurement parameters that are available for TDMA analysis include (examples below are from Agilent E7474A solution):

- scanner or receiver signal power - reports and maps the channel power and DVCC for a specified channel
- IS-136 Layer 1 data, including BER, MAC, RSSI, timing advance, handoff indicator and color code
- IS-136 Layer 1 best neighbor channel number and best neighbor RSSI
- IS-136 Layer 3 common air interface messaging
- IS-136 call data such as block calls, drop calls and failed handovers

Generic IP data test functionality

With the convergence of mobile phones and the internet, wireless networks need to be optimized for data services. OPAS32 provides the ability to analyze packet data test measurements from the Agilent network optimization product line. The feature is included with GPRS and cdma2000 technologies and will be rolledout to cover further technologies in future releases. It provides engineers with a thorough understanding of where and why throughput and delay problems occur within the network. The packet data analysis includes both transmit and receive path analysis of collected measurements so complete end to end transmission performance can be evaluated.

Using packet data measurements in conjunction with RF measurements allows engineers to understand and evaluate:

- the mobile users point of view of wireless data network performance
- end to end to end network performance.
- problems on both the transmit and receive paths
- data integrity
- data throughput
- delay (one way and round trip delays)
- where high BER, line errors and packet errors occur and whether it can be attributed to the RF environment or to the network infrastructure

For additional information on the generic data measurement application please refer to *Agilent Wireless Data Measurement Data Sheet* (literature number 5988-1507EN).

¹ For the tools supported by OPAS32. ASCII data from other tools can also be imported into OPAS32.

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

By internet, phone, or fax, get assistance with all your test & measurement needs

Online assistance: www.agilent.com/find/assist

Phone or Fax

United States: (tel) 1 800 452 4844

Canada: (tel) 1 877 894 4414 (fax) (905) 282-6495

China: (tel) 800-810-0189

(fax) 1-0800-650-0121

Europe: (tel) (31 20) 547 2323 (fax) (31 20) 547 2390

Japan: (tel) (81) 426 56 7832 (fax) (81) 426 56 7840 Korea: (tel) (82-2) 2004-5004 (fax) (82-2) 2004-5115

Latin America: (tel) (305) 269 7500 (fax) (305) 269 7599

Taiwan: (tel) 080-004-7866 (fax) (886-2) 2545-6723

Other Asia

Pacific Countries: (tel) (65) 375-8100 (fax) (65) 836-0252 Email: tm_asia@agilent.com

Product specifications and descriptions in this document subject to change without notice. Copyright © 2001 Agilent Technologies Printed in U.S.A. August 28, 2001 5988-0247EN



Windows is a U.S. registered trademark of Microsoft Corporation. All other products are trademarks or registered trademarks of their respective owners.



🔅 Agilent Technologies