



LinkScope CTI Analysis and Monitoring Solution

Two Products in one Complete Solution

White Paper

LinkScope Product Suite

The LinkScope suite is a cost effective way to monitor, pinpoint, decode, and quickly resolve critical problems across all call center systems. Its two products, the CTI Analyzer and the CTI Monitor work together, or apart, to give you the maximum ability to forecast and eliminate problems before they happen.

Where contact center experience meets innovative technology.

The LinkScope suite provides:

- Real-time alerts and decoded logs of suspected failure points,
- Clear equipment-neutral insight delivered in “plain English,” format
- Comprehensive view-spanning and monitoring of single or multi-site PBXs, ACDs, IVRs, host interfaces, and a wide variety of CTI Servers.
- Integrated support with Nortel, Aspect, Avaya, Cisco and other systems.

Primas has special order interfaces for other systems; Oracle, Siemens, Rockwell, Intecom, and many others.

LinkScope CTI Analyzer and Monitor Features At-a-Glance

LinkScope CTI Analyzer Features & Benefits

FEATURE	BENEFIT
CTI Analysis in “plain English”	<ul style="list-style-type: none"> • Quickly find the root causes • No more hunting through hex • No more piecing together incomplete, equipment-specific logs
Use any CTI Network Port	Zero disruption to systems
Equipment-neutral insight	<ul style="list-style-type: none"> • Maintain control • No waiting on supplier decodes • Comprehensive view of all call center systems: PBX, ACD, CTI servers IVR, dialers, host interfaces

LinkScope Monitor Features & Benefits

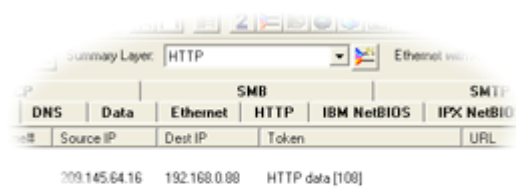
FEATURE	BENEFIT
Real-time problem alerts and log decoding	Comprehensive reliability
IVR port monitoring and reporting	Continuous, fail-safe monitoring
Comprehensive, intelligent alerts	E-mail w/ compressed log file - SNMP traps, HP OpenView, Tivoli - Phone calls from your IVR
Call Trace	Get access to the history of an incoming customer call via a web browser. Excellent capability to resolve customer complaints by immediately having access to the customer experiences detail.
Dashboard	Monitor the health of your single or multiple call centers.

How the LinkScope Product Suite Works

Frame Analysis

View data at varying levels of granularity, from frame/message level to bit/byte level, on the Frame Display Window. Frames are decoded into easy to understand English on the Frame Display Window's Decode Pane. Frames containing errors are highlighted in red in the Frame Summary pane, indicating the availability of detailed error analysis information in the Frame Decode pane. The level of drill-down analysis detail and the size of each drill-down pane are completely user controlled. Multiple Frame Display Windows can be opened simultaneously to allow users to view different sections of the captured data. Since all windows are synchronized, a range of events selected in the Frame Display Window will also be selected in all other windows and panes.

Frame Summary



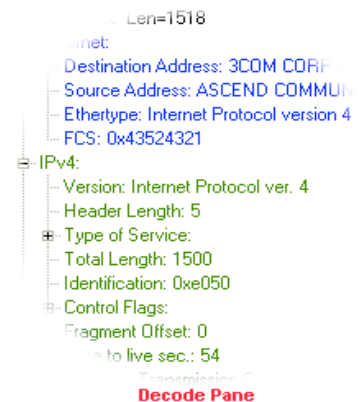
Summary Pane

View a one line high-level overview of each data frame/packet using the Summary Pane. Select a protocol layer and the most significant fields are displayed in a concise form. Selecting a frame causes a detailed view to appear in the Frame Decode pane. In order to facilitate troubleshooting, all panes are adjustable in size and are synchronized -

selecting a frame in the Summary pane automatically updates the other panes, and selecting an item in the Decode pane highlights the corresponding bits or bytes in the other panes.

Frame Decode

View a comprehensive layered decode of each frame/packet through the Decode Pane. Each field of a data frame is decoded layer-by-layer using a tree structure, with clear, concise descriptions. Selecting a field will automatically highlight the associated bytes in binary, hex, and ASCII. Selecting an item in the Decode pane will also highlight corresponding bits/bytes in other panes. Use the Summary pane to identify protocol or messaging problems and then drill-down using the Decode pane to solve the problem.

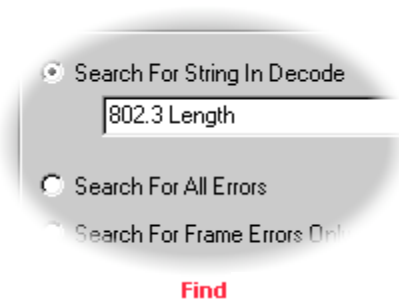


Multiple Frame Analysis

The Protocol Navigator Window displays multiple decoded packets/messages in one powerful, yet easy-to-use, decoder screen. It allows you to analyze multiple protocol layers within multiple data packets while utilizing its quick and powerful filtering capabilities. Use the Protocol Navigator Window to find protocol problems and to drill-down in conjunction with the Frame Display Window (which is synchronized with the Protocol Navigator) to identify bit, byte, or timing problems.



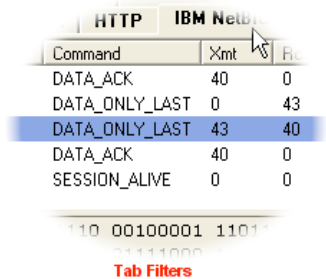
Frame Level Search



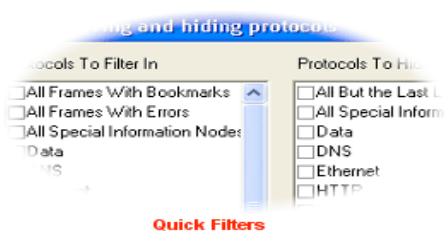
Examine and search data as it is being captured (or after it has been saved), through use of the Find Function. Use the Find Function to quickly pinpoint problem areas in the captured data or to move to a specific frame. The frame level Find Function can 1) search the text of the decode for a specified string, 2) search for errors, and 3) limit the search to specific node. Data searches can also be performed at the byte level.

Tab Filters

Tab filters within the Frame Display window allow you to filter out all messages/frames that do not contain the specified protocol. This feature simplifies the process of drilling down into your messages/frames.



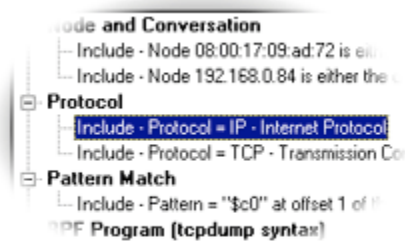
Quick Filters



Quick filters within the Frame Display window add powerful, yet easy to use filtering to include or exclude/hide messages/frames that contain a specific protocol, and it also allows you to filter on specific messages.

Capture and Display Filters

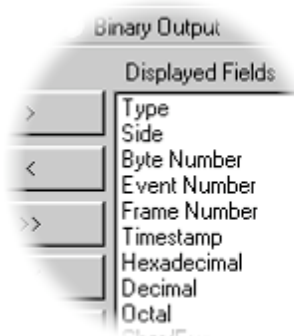
Sift through large volumes of data as it is being captured (or after it has been saved), and focus only on the problem areas. LinksScope's unique "drill down" capability enables the user to apply new filters while preserving previous views of the data. Data can be filtered on either an "include filtered data" or "exclude filtered data" basis. Filter parameters include protocol and data pattern; advanced mode enables the user to set up complex filters. Capture and display filters can be saved for later use.



Filters

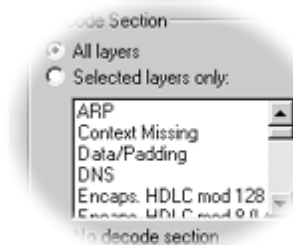
Export

The Export feature supports two types of data export: Event Export and Frame Export. Event Export outputs event level information in text or binary format. Frame Export



Event Export

outputs frame-level decode information in text format. Both export functions provide output that is human readable, suitable for importing into a spreadsheet or database, or useable by other programs for post-processing. Export templates suitable for this purpose (Excel/Access, comma-separated values, etc.), are included with the product, as is support for the creation of user-definable export templates. A C++ software program, which demonstrates the use of a simple API capable of reading a binary export file, is also included.



Frame Export

LinkScope Suite: Detailed Features

Ethernet Protocol Decoders Included

- TCP, UDP, IP, ARP, RARP, DNS, HTTP, ICMP, IGMP, NBDS, NBNS, NBSS, SMTP, IBM, NetBIOS, SMB, Novell Netware (IPX, SPX, IPX NetBIOS, IPX RIP, IPX SAP, NCP), ISO, and CLNP.

Frame Decoder

- Quickly create custom decodes for proprietary protocols and extensions to existing protocol decoders.
- If you don't have the resources to write a decoder yourself, contact Frontline to get an estimate for their decoder staff to write the decoder for you.

Data Capture

- Captured data includes data bytes, control signals, and error conditions.
- Data can be captured to RAM or directly to disk.
- Capture buffer sizes are limited only by available memory or disk space.
- File Series Option automatically closes and saves a capture file to disk based on size or a predefined time, and then opens a new capture file incremented by 1 and continues data capture.
- Add notes to your capture files describing the contents of the data for use with resolving problems and archiving.

Data Displays

- Data can be analyzed in real-time using the Frame Display, Protocol Navigator, and Statistics Window.
- Multiple synchronized windows can be viewed simultaneously.
- Frame/Packet contents are decoded to the byte and bit level.
- Byte level information.
- Characters can be displayed in ASCII, EBCDIC, or Baudot.
- Nonprintable characters are displayed using hex and mnemonics.
- Supported radices include hex, octal, decimal and binary.
- Decoded data formats supported include 16 bit Integers, 32 bit Integers, IEEE 32 bit Floating Point, 32 bit Reverse Floating Point, and ASCII.
- Add bookmarks to highlight important bytes and frames for easy access.

Search Criteria Included

- Byte Level: timestamp, control signals, errors, and patterns (patterns include wild-card characters at the bit level, nibble level, and byte level);
- Frame Level: frame decodes can be searched on the text of the decode, with or without wildcards.

Capture and Display Filters

- Node and node pairs using MAC or IP addresses.
- Protocol.
- Data pattern.
- Messages.
- Advanced mode for complex filters.
- Quick filters for the Frame Display and Protocol Navigator Windows include protocol filtering in and out, filtering on the Summary Pane, and filtering on messages.
- Tab filters in the Frame Display allow you to filter in frames/messages that contain specific protocols.

Statistics Display

- Utilization: Current, average, and peak.
- Frames Per Second: Current, average, and peak.
- Bytes Per Second: Current, average, and peak.
- Totals: Number of frames/messages, bytes, multicast frames, and broadcast frames.
- Frame/message size distribution and average frame/message size.
- Total number of frames with errors (alignment errors, CRC errors).

Data Transmission

- Using external utility, data files can be transmitted one time, multiple times, or continuously.
- Data transmission delays can be inserted in millisecond, second, or minute increments.

Timestamping

- Provides both absolute and relative displays of event timing for bytes and frames/messages.
- Calculates time intervals between events and frames/messages (delta time) and effective data rate.
- Timestamp resolution to <1 microsecond.

Configuration Management

- I/O configurations, protocol stacks, and filters can be saved for future use.

Export Features

- Using the Export Utility Export Events or Export Frames in text or binary format.
- Export output suitable for importing into a spreadsheet, database or other post-process program for intricate analysis of the data. Templates include Excel/Access, CSV, and re-transmit.
- Frame Display Window Summary Pane Export, exports the contents of the Summary Pane into CSV format for loading into spreadsheets or other programs to do intricate statistical analysis of protocol and network information.
- C++ software program, which demonstrates the use of a simple API capable of reading a binary export file, is also included.

Help

- Comprehensive online help provides complete operating instructions.
- Quick Start Guide enables rapid product set-up and operation.

System Requirements

- PC: Pentium running Windows 95b, 98, Me, NT, 2000 or XP.
- RAM: 128 MB.
- Disk Space: 35 MB (capture file size is limited by available disk space).
- Standard Ethernet Network Interface Card (NIC). [Ethernet-based only]
- Maximum data rate supported is dependent on PC processor speed.

Specifications & Requirements	
Data Rates	Supports 10 Mbps and 100 Mbps Ethernet.
Network Interface	Uses any Windows compatible 10/100 Ethernet Network Interface Card (NIC).
Timestamping	Absolute and relative Timestamping; <1 microsecond resolution.
Other Features	FrameDecoder: for writing custom/proprietary decoders or extensions to current decoders; 1 year Premium Maintenance.
Protocols Supported	Standard Commercial Protocols included with product: TCP, UDP, IP, ARP, RARP, DNS, HTTP, ICMP, IGMP, NBDS, NBNS, NBSS, SMTP, IBM NetBIOS, SMB, Novell Netware (IPX, SPX, IPX NetBIOS, IPX RIP, IPX SAP, and NCP), ISO and CLNP.