

EtherPeek VX™

Expert VoIP Network Analyzer



VoIP Analysis with EtherPeek VX™

Enterprises are deploying mission-critical applications—such as Voice over IP—on their networks to gain operational efficiency and lower costs. As budgets are limited, IT professionals need a single solution that provides more visibility into the VoIP application in addition to the Ethernet network.

Ethernet and VoIP networks force network engineers to address unique challenges, including security, hardware configurations, performance and optimization calculations, latency and throughput restrictions, quality of service assurance, and other Ethernet and voice over IP specific events. Faced with these complexities, how can network engineers ensure that their networks meet rising expectations for security and performance while maintaining the promise of ease-of-use and low cost of ownership?

EtherPeek VX, WildPackets' Expert VoIP Network Analyzer, is the ultimate solution for intelligent diagnosis of pre and post-deployment VoIP and Ethernet network issues within enterprises. In addition to its advanced Ethernet network analytics, EtherPeek VX offers per-call analysis and supports multiple signaling protocols. The media plane analysis looks at packet-level details of RTP and RTCP streams and evaluates packet delay variations, packet loss, jitter, and provides MOS scores as well as R-Factor values for each call.

EtherPeek VX provides accurate Quality of Service and Voice quality measurements. Comprehensive drill-down capability can isolate every level of the signaling and media planes for detailed views of VoIP activity and call quality. It easily detects problems such as inefficient bandwidth utilization, lost packets, out of order packets, poor compression, excessive variances in jitter, quality degradation, inadequate Voice Activity Detection (VAD), poor call quality and long call setup time.

Designed to deliver a complete LAN and VoIP network troubleshooting and analysis solution solving complex network problems, EtherPeek VX can:

- Display all active and closed calls in an elegant summary screen and allow easy, single click drill-down capability for detailed, per-call troubleshooting.
- Offer intelligent VoIP diagnosis by providing the Signaling and Media analyses on a per-call basis.
- Provide accurate assessments of objective VoIP quality metrics based on the passive MOS and R-Factor scales.
- Provide an easy way to perform subjective voice quality assessments and to evaluate the impact of upgrading/degrading network resources for VoIP applications by taking advantage of its unique call playback and jitter buffer modification capabilities.
- Provide faster problem identification and resolution by taking advantage of unique real-time network troubleshooting and packet drill-down capability that includes powerful on-the-fly filtering.

- Offer intuitive visual access to the Ethernet network by providing real-time views of the associations within the LAN and the conversation flows between network nodes.
- Display deep flow analysis with the comprehensive Visual Expert which relates the details on network traffic with expert diagnoses.
- Identify and locate typical yet hard to diagnose problems on the network using numerous expert diagnostics.
- Develop and monitor baseline characteristics of the Ethernet network easily and quickly using comprehensive Statistics, Reports and Graphs.
- Respond immediately to problems on the network using preconfigured, Ethernet-specific alarms and triggers.
- Perform analysis of mission critical applications both in real-time and post capture.

Real-Time Troubleshooting

EtherPeek VX is the only network analyzer offering both Ethernet and VoIP diagnostics in real-time. On the Ethernet side, the Expert view provides in-depth analysis of latency, throughput, and numerous network problems in a conversation-centered display. Many of the test elements have user-defined settings and thresholds, allowing you to fine-tune the Expert System to suit your network environment. For VoIP, EtherPeek VX can analyze up to 100 open calls simultaneously - without requiring any expensive voice processing hardware - providing unsurpassed capacity for post-deployment troubleshooting. In addition to VoIP decodes and analyses, EtherPeek VX also evaluates and displays the call setup mechanism, in real-time, for each open call.

Expert Analysis

The heart of EtherPeek VX troubleshooting capability is its Expert system. The real-time Expert provides dozens of diagnoses, including application layer and Ethernet event identification, and ART analysis. The problems that are found are listed by conversation, allowing you to pinpoint the source quickly. The Expert system also provides fault description, probable causes, and potential remedies for each diagnosis. The Expert EventFinder™ is configurable, and can be tailored readily for your own networking environment and IT policies.

Visual Expert

The Visual Expert gives you even more comprehensive visual data about network traffic and expert diagnoses. The Visual Expert makes it easier to understand what's happening on the network and to remedy problems.

Visual Expert includes Packet Visualizer, payload reconstruction, a wide range of new conversation-oriented graphs including tcptrace, a detailed summary pane, What If view estimating the effects of changes in various network and application parameters on the network performance, and Compare view comparing and matching the flows in different captures.

Security Policy Adherence

Today more than ever, data security is of paramount importance. Networks carry the valuable intellectual property, confidential financials, and customer data that make your business a success. Fortunately, EtherPeek VX contains powerful security analysis capabilities that help IT Professionals maintain networks that adhere to corporate security policies. EtherPeek VX is used to deter security breaches, monitor data integrity, automatically respond to security threats, and intercept, log and analyze unauthorized access.

Monitoring and Reporting

The EtherPeek VX Expert Peer Map provides a quick snapshot of all network activity. Drawn as a vertically-oriented ellipse, the Peer Map is able to accommodate the display of all nodes on the network.

No other network analysis tool can touch the extraordinary number of Ethernet, protocol, and application statistics reported by EtherPeek VX. Statistics are easily turned into real-time graphs or alarms with the right-click of a button. Further, statistics can be combined into sophisticated custom graphs, providing the user incredible flexibility in monitoring network activity.

Sophisticated graphing and trending features allow collecting, displaying, and reporting any node, protocol, or summary statistic available over a user-specified period of time. Historical analysis can be viewed through a variety of graph options from within the program, data can be output in enhanced XML, html, or CSV format.

VoIP Signaling & Media Plane Analysis

EtherPeek VX supports multiple VoIP signaling protocols including SIP, H.323, MGCP, Megaco, SCCP (Skinny v3.0.3), NCS, TGCP, SIPT, C-SIP and more. EtherPeek VX associates all the signaling (including RTCP status reports) and voice streams (RTP) on a per call basis and provides a flow of the signaling messages and endpoints that participate in the call. This includes measuring call setup durations and providing a Call Detail Record (CDR) for each call.

The media plane analysis looks at the packet-level details of RTP and RTCP streams, and evaluates packet inter-arrival time, variation, packet loss, jitter and other parameters. Further, EtherPeek VX identifies packets that cause problems like duplicate packets and out of sequence packets. EtherPeek VX also provides non-intrusive voice quality monitoring by evaluating Mean Opinion Score (MOS) and R-Factor in real-time.

VoIP Reports and Network Statistics

EtherPeek VX aggregates statistics and measurements of all active sessions to give a complete picture of the VoIP network status. EtherPeek VX provides the number of opened calls per signaling type, number of opened media channels and the network throughput of the RTP, RTCP and signaling links. It also reports statistics on jitter, packet loss, and bandwidth.

Subjective VoIP Quality - Variable Jitter Buffer Playback

In addition to objective VoIP measurements, EtherPeek VX enables users to evaluate voice quality subjectively by using the call playback feature. This feature also allows users to vary the size of the jitter buffer. For instance, when capturing VoIP close to the listener, one can determine if a lower jitter buffer and thus lower delay in delivering voice to the handset, still delivers an acceptable level of quality.

And Still Analyze Everything Else on Your Network...

EtherPeek VX incorporates the complete industry-leading protocol analysis and expert system technology (from the EtherPeek NX product) to provide precise, contemporary analysis of today's complex networks, making VX the only tool you need to manage your Ethernet and VoIP network. Included are a breadth of features and technological innovation no other tool can offer, including real-time Expert analysis on multiple adapters, Application Response Time (ART) analysis, extensive application protocol decoding, packet generation, alarms, triggers, notifications, monitoring, and reporting.



The VoIP tab within EtherPeek VX presents a call-oriented view of network traffic.

Capture 2
Packets received: 17,321 Memory usage: 24%
Packets filtered: 17,321 Filter state: Accept all packets

Open Calls Analyzed

No.	Call No.	Source IP	Destination IP	From	To	Media Channels	RTCP Ch.
1	5	213.0.0.8	213.0.0.1	1000		2	
2	6	213.0.0.1	213.0.0.8	2000		2	
3	8	213.0.0.8	213.0.0.1	1001		2	
4	9	213.0.0.1	213.0.0.8	2001	1	2	
5	11	213.0.0.8	213.0.0.1	1002		2	

Closed Calls Normal Closed No Response Failure Cut

No.	Call No.	Call Type	Source IP	Destination IP	From	To	Media Channels
1	0	SIP	1.1.1.1	2.2.2.2	<sip:User1@172...	sip:User1@172...	2
2	1	SIP	172.15.15.15	172.15.1.20	sip:Moshe@172...	sip:AutoTests@...	2
3	2	SIP	172.15.15.15	172.15.1.20	<sip:Moshe@17...	<sip:AutoTests...	2
4	3	RAS	213.0.0.8	213.0.0.7	1111		
5	4	RAS	213.0.0.1	213.0.0.7	123		
6	19	SIP	172.15.0.1	172.15.0.2	<sip:User1@172...	<sip:User2@172...	

EtherPeek VX analyzes both the signaling plane and the media plane of each call.

allVoIPsig_pkt.pkt

Call #0, Signaling SIP, Details :

Summary		Time	
Proxy	Not Found	Start (Hour: Min: Sec: ms)	00:00:17.545
To	sip:User1@172.15.1.50:5060	End (Hour: Min: Sec: ms)	00:00:40.748
From	<sip:User1@172.15.1.60:5060>	PDD (Sec: ms)	
End Cause	BYE	Setup (Sec: ms)	0.010
		Duration (Hour: Min: Sec: ms)	0:00:23.193

View Flow...

Signaling

Protocol	N.	Source IP	Destination IP	Trans...	Sourc...	Desti...	Call ID	End Cause	Start (Hour: Min: Sec: ms)	End (Hour: Min: Sec: ms)
SIP	0	172.15.1.60	172.15.1.50	UDP	5060	5060	Ey@wclUH2@17...	BYE	00:00:17.545	00:00:40.748

Media

Protocol	N.	Source IP	Destination IP	Sourc...	Desti...	Total Pac...	From	To	SSRC	Encoding
RTP	1	1.1.1.1	2.2.2.2	9000	10000	892	<sip:User1@172...	sip:User1@172...	00000000	G.711 PCM A-Law
RTCP	2	1.1.1.1	2.2.2.2	9001	10001	2				
RTP	3	2.2.2.2	1.1.1.1	9000	10000	269	sip:User1@172...	<sip:User1@172...	00000000	G.722
RTCP	4	2.2.2.2	1.1.1.1	9001	10001	1				

Jitter Buffer (ms.) 100

Packets: 20,835 Duration: 0:04:29

EtherPeek VX allows for the playback of calls on the network, including the ability to hear the effect of modifications to the jitter buffer.

Capture 1
Packets received: 20,956 Memory usage: 30%
Packets filtered: 20,956 Filter state: Accept all packets

Call #0, Channel #1, RTP Channel Properties

Statistics Audio Delay Variation Graph Packets Packet Statistics Graph

File name : C:\Program Files\WildPackets\AiroPeek Beta\temp\7010\dump\AudioStream_0_1.wav

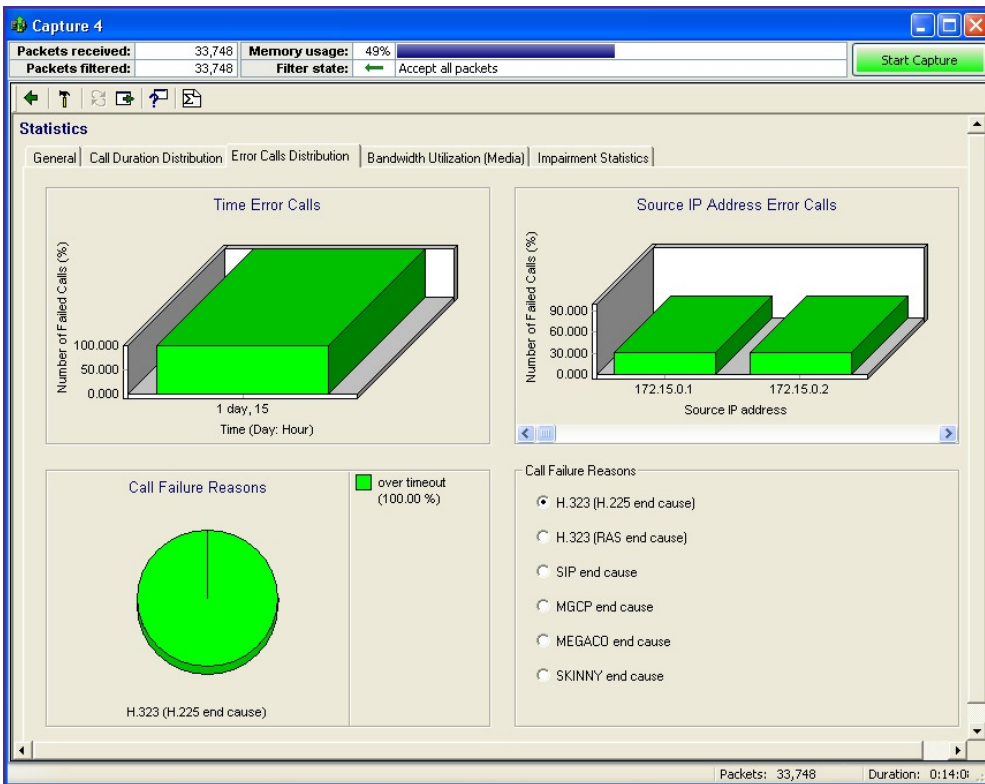
Compression : G.711 PCM A-Law

Jitter Buffer (ms.) 100

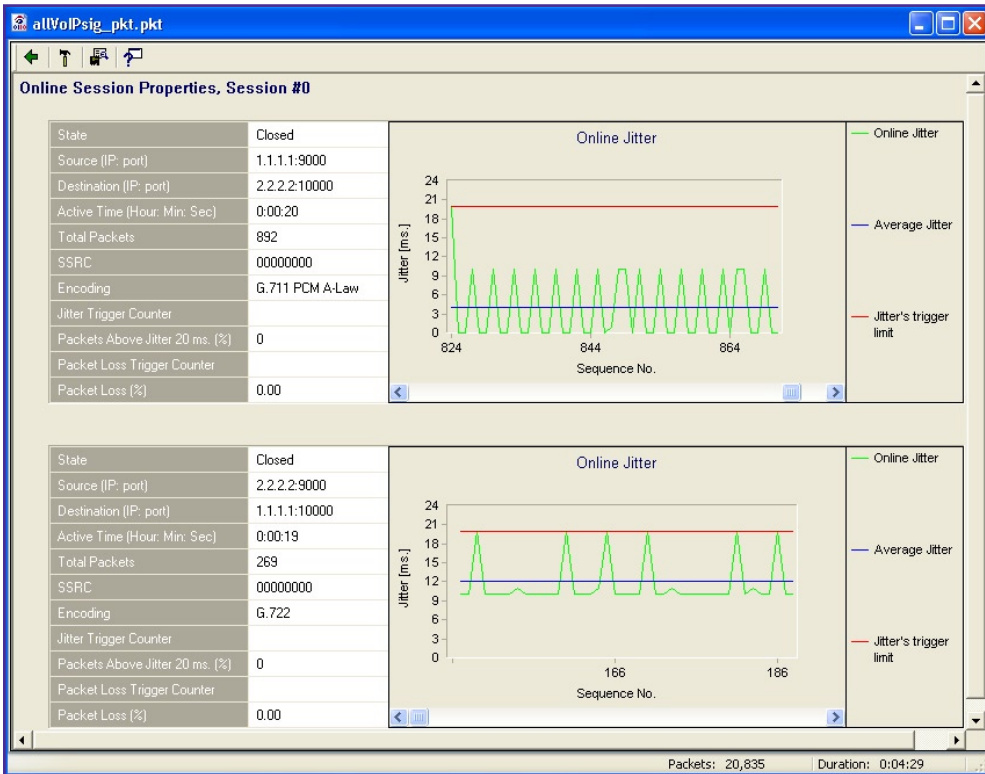
Save As...

Packete





EtherPeek VX provides detailed statistics on each call and can diagnose failures.



EtherPeek VX performs detailed call analysis including online jitter.



EtherPeek VX Features

EtherPeek VX Benefits

VoIP signaling analysis

Retains association between end-points in VoIP call and the call control protocol. Allows for easy diagnosis of call setup problems in real time. Supports multiple VoIP signaling protocols including SIP, H.323, MGCP, Megaco, SCCP (Skinny v3.0.3), NCS, TGCP, SIPT, C-SIP and more.

VoIP media analysis

Provides packet-level decodes of a VoIP call to evaluate impairments like packet inter-arrival time, packet loss, jitter and other parameters. Problem packets (like duplicate packets, out of sequence packets, etc.) are easily identified to enable better troubleshooting and faster find-to-fix times.

Call quality monitoring (non-intrusive)

Provides accurate assessments of objective VoIP quality metrics based on the passive MOS scale (ITU-T G.107 E Model) and R-Factor. This monitoring takes place without interfering or affecting the quality of the call.

VoIP Reports & Network Status

Obtain complete picture of the VoIP network status by aggregating measurements of all active sessions. Signaling statistics include open call duration, signaling type distribution, Grade of Service, signaling error distribution, and more. Network stats show number of opened calls per signaling type, network throughput and VoIP impairments (jitter and packet loss).

VoIP call playback

Complete call playback allows users to experience the same quality in playback as was in the original call. EtherPeek VX also allows users to vary the jitter buffer during call playback. This provides an easy way to perform subjective voice quality assessments, and also evaluate the impact of upgrading/degrading network resources for VoIP applications.

Expert analysis

Provides Automated Problem Identification on your network. Evaluates and analyzes all 7 layers of OSI model, separates packets into independent conversations, analyzes device by device to isolate problem behavior, describes behaviors indicative of network, client, server, router, or infrastructure problems.

Expert EventFinder

Allows users to customize behavior of expert system in order to tailor it to the characteristics of their own networks. EventFinder also provides descriptions, causes, and remedies for each of the problem conditions the expert system encounters.

Peer Map

Provides a visual display of all conversations seen on the network, allowing the user to quickly breakdown network traffic, identify top talkers, and drill down into protocols and packet transmission statistics.

Monitoring

The summary stats window provides a real time tally of all the statistics collected by EtherPeek VX. This allows the user to easily track all that is happening on the network, including the output of the Expert analysis. Right-click to create a graph, add multiple data points to monitor specific network activity.

Report generation

HTML, XML, or CSV output provides the user a historical view of global or capture-specific statistics. Useful for remote monitoring and management reports.

Alarms

Provides alerts to over 100 real-time conditions tracked by the alarm system. EtherPeek VX has the ability to set 3 conditions - Suspect, Problem and Resolved - providing finer control over the severity of alarm.

Triggers

Start a capture or send a notification based on the contents of a packet matching user-defined criteria. Catch worm or virus activity, intruders, or a forbidden application.

Multiple capture windows

Each capture window can have its own filters, expert analysis, peer map, etc. Useful for monitoring different application servers, comparing traces for client and server, and starting new captures to isolate problem devices while maintaining network capture buffers simultaneously.

Multiple adapters

Monitors multiple segments or capture traffic from both sides of the router to track packet flows.

"Select Related" filtering

Provides a means of extracting the precise packets the user is looking for. The user can quickly select the packets corresponding to specific hosts, protocols, conversations, and even expert problem reports.

Standard and extensible protocol decoders

Decodes hundreds of network, transport and application protocols. Packet contents clearly laid out allows a user to more thoroughly troubleshoot a network issue or track down a security breach. Standard protocols can be customized or extended with the Decoder SDK that accompanies every EtherPeek VX purchase.

Packet generation

Allows you to send either an edited test packet or packets from the buffer back out onto a live network. This can be useful in a lab environment to capture and observe problems or perform stress tests.

Visual Expert

Provides comprehensive visual data about network traffic and expert diagnoses. The Visual Expert makes it easier to understand what's happening on the network and how to remedy problems.



Innovative Technology

WildPackets is the leader in network analysis technology. WildPackets is the leader in network analysis technology. Innovative technology is what allows EtherPeek VX to provide a comprehensive and flexible solution to demanding IT professionals. No other analyzer, for example, offers both real-time VoIP and expert analyses in a single product. Other unique features in WildPackets technology are multiple simultaneous analysis windows, and binding those windows to multiple adapters. This innovation offers real benefits, allowing you, for example, to monitor both sides of a router, or track network usage at the same time as troubleshooting a client issue.

The advanced alarm threshold notification system in EtherPeek VX includes dozens of real-time or post-capture conditions. Creating new alarms is as easy as right-clicking on a statistic you'd like to track. Further, EtherPeek VX provides two levels of warning and a resolve condition.

By Network Developers for Network Developers

EtherPeek is designed to provide a powerful and flexible protocol analysis environment for network and software developers, in addition to network analysts. All WildPackets products provide rich, out-of-the-box solutions. However for those instances when you need to more, the networking gurus at WildPackets have designed a product architecture with extensive APIs, SDKs, and extensibility tools to help you build your own solutions that best meet your own specific business need.

Design your own 24x7 monitoring application. Write automated scripts that trigger events and pass data between WildPackets and other systems. Many types of applications for extending the monitoring, troubleshooting, and reporting capacity of WildPackets' products have already been built. WildPackets encourages and supports this community via the WildPackets Developers Network, <https://wpgdn.wildpackets.com/>

Join the WPDN today. EtherPeek is just the beginning of the rich and open WildPackets networking world.

WildPackets Academy

WildPackets Academy offers comprehensive network analysis instruction, meeting the professional requirements of network managers at all levels. All course offerings are available in public venues and as customizable on-site programs. For complete course outlines and schedules, visit www.wildpackets.com/services/academy/overview

EtherPeek Getting Started Guide

The EtherPeek Getting Started Guide is available at www.wildpackets.com/products/etherpeek/etherpeek_vx/overview

Technical White Papers

Our instructors have authored informative white papers and tutorials on Network Analysis and Security. Visit www.wildpackets.com/services to download.

Ordering Information

WildPackets products are available from our Channel Partners or directly from WildPackets. Please visit our web pages to locate a partner near you, or contact sales@wildpackets.com for assistance in ordering.

Demonstration Software

EtherPeek VX Demo software is not available. To download EtherPeek NX Demo software, please visit www.wildpackets.com/products/demos

EtherPeek VX Product Maintenance

One year of Standard Product Maintenance, including all product updates and upgrades, is included in the purchase price of EtherPeek VX. WildPackets' Premium Maintenance Program provides enhanced levels of service and extends the benefits and product update period.

Please visit www.wildpackets.com/support for details about our maintenance offerings.

About WildPackets, Inc.

From the desktop to the datacenter, from wireless LANs to Gigabit backbones, on local segments and across distributed networks, WildPackets products enable IT organizations to quickly find and fix problems affecting mission-critical network services.

WildPackets products are sold in over 60 countries through a broad network of channel and strategic partners. Over 5,000 customers, spanning all industrial sectors and including 80% of the Fortune 1000, use WildPackets products daily to troubleshoot networks and maximize network uptime.

For further information, please visit www.wildpackets.com



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