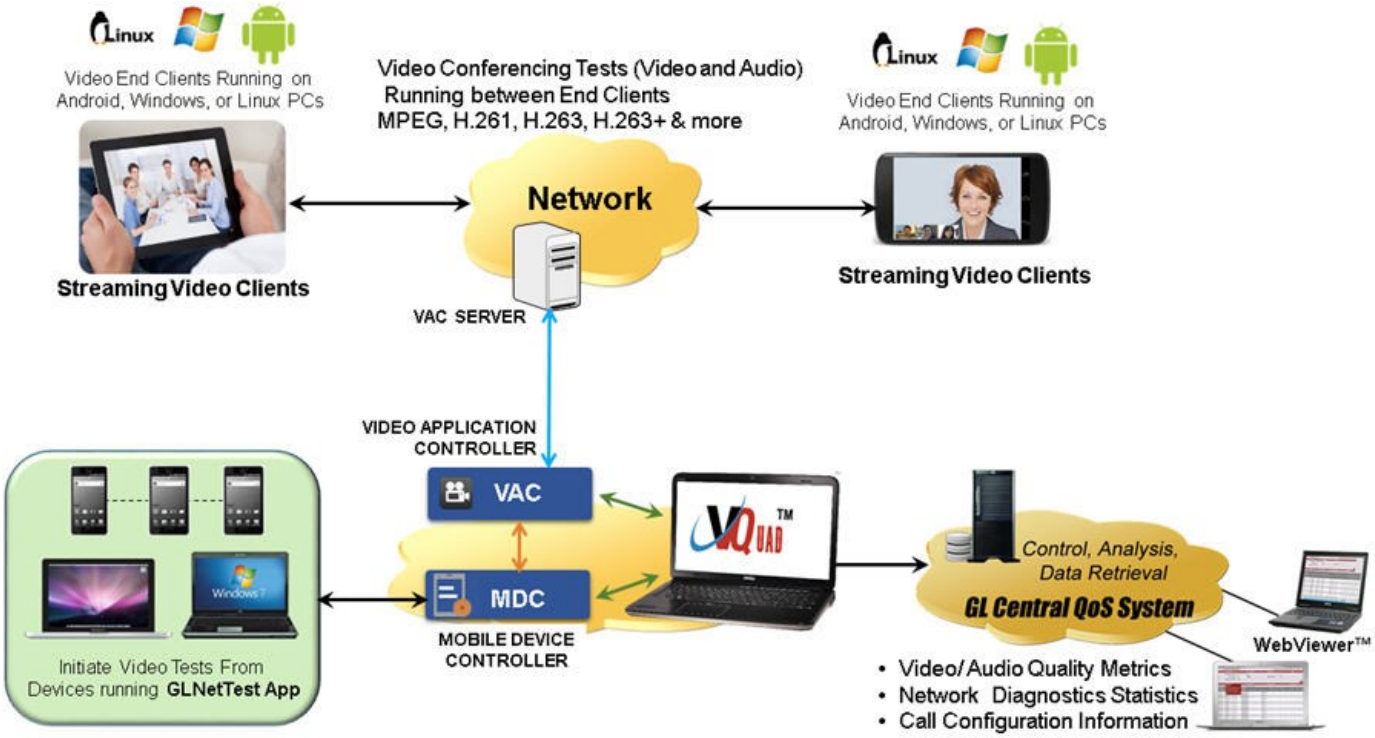
Automated Video Quality Testing Solutions



Overview

Video services can be broadly classified into two categories: **Video Broadcasting** or streaming, and **Video Conferencing**. Video broadcasting is essentially a one way application, downstream to the consumer, and Video Conferencing, is basically two-way web-based interactive application, much like voice, with simultaneous upstream and downstream for communications over IP. Consumer applications such as Google Hangouts, Apple Facetime, Skype, and Enterprise solutions from Cisco, Polycom, BlueJeans, are some examples.

Along with existing voice, and data quality test solution, GL's VQuad™ now adds the ability to test, and measure video services over IP, and Wireless networks to determine the performance of a video call.

GLNetTest app along with the GL VAC (Video Application Controller) which is installed on any off the shelf Android mobile device, thus supporting both video and data testing from the mobile device. In other words, the GL Video Conference test solution tests video between any two devices (Android, Windows, Linux), while allowing the user to specify the exact Video parameters and returning Video and Audio MOS along with a variety of Video metrics.

The GLNetTest supports Data testing from the mobile device including the following tests, TCP, UDP, HTTP, VoIP, FTP, DNS, SMS, and Video Simulation. In addition, the GL VQuad™ application supports fully automated testing of the Video and Data test solutions using the VQuad™ scripting.

Video test results include Video MOS, Audio MOS, and A/V MOS along with a variety of analytical metrics and quality metrics. All the video/audio test results and events can be automatically sent to the central database. Using WebViewer™, query and display these results, statistics, status, and even plot Pass/Fail results directly on Google Maps.

For more details, visit Automated and Manual Video Quality Testing webpage.

GL Communications Inc.

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Main Features

- Supports Android, Windows, and Linux video end client devices
- Supports both manual and automated (scripted) video testing within VQuad™
- Monitor Audio/Video Quality in Real-time
- Monitor service level compliance with SLAs
- Perform pre-deployment service testing
- Unlimited test plans configurations with Codec, Frame Rate, Bandwidth, Latency, GoP (Group of Pictures) Structure and Video Resolution
- Test results include Video Quality (Relative MOS-V), Audio Quality (Relative MOS-A), Audio Video Quality (Relative MOS-AV), IP Network condition parameters, Signaling Performance, and Call Config Info
- Initiate multiple (consecutive and/or concurrent) IP video calls between licensed agents
- Customized, consolidated, and interactive charts showing quality and diagnostic metrics
- Supported on Linux/CentOS, Windows 10 and above operating system

Video Tests from VQuad™

Video tests can be performed manually between 2 end points or completely automated using the flexible and versatile VQuad™ scripts.

Manual Video Tests from VQuad™

Manual video tests can be configured by connecting to the VAC server and optionally to the Central DB to send the results directly to the central location for display in Webviewer™. Licensed Test Agents, Test Plans, and Interface test parameters are dynamically set once connected to the VAC Server. However, users can also manually get the test parameters from the ini configuration file and set the source and destination end points to run the test.

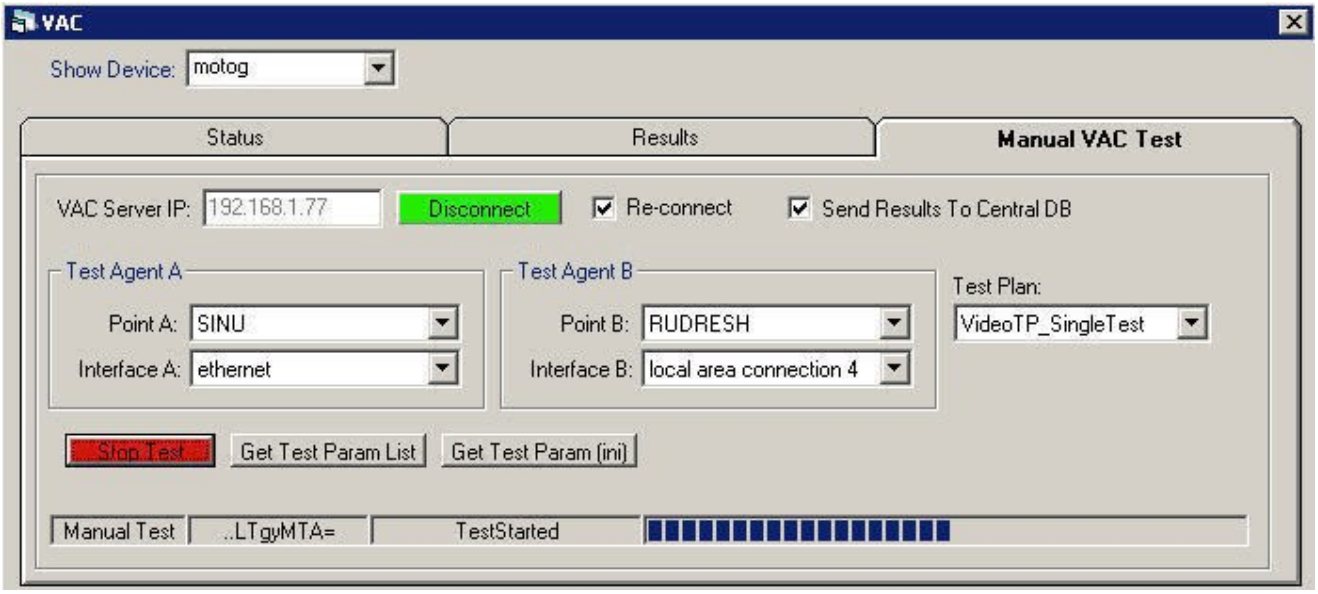

Figure: Manual Video Testing from VQuad™

Automated Video tests from VQuad™

VQuad™ scripting provides automation capability, remote accessibility, analysis and centralized data retrieval, which are just a few attributes of GL's next generation Voice, Video, and Data Testing solution. Using VQuad™ scripts the video tests can be automated on multiple devices, the status and results for all the connected devices can be viewed in the VAC Test Events log.

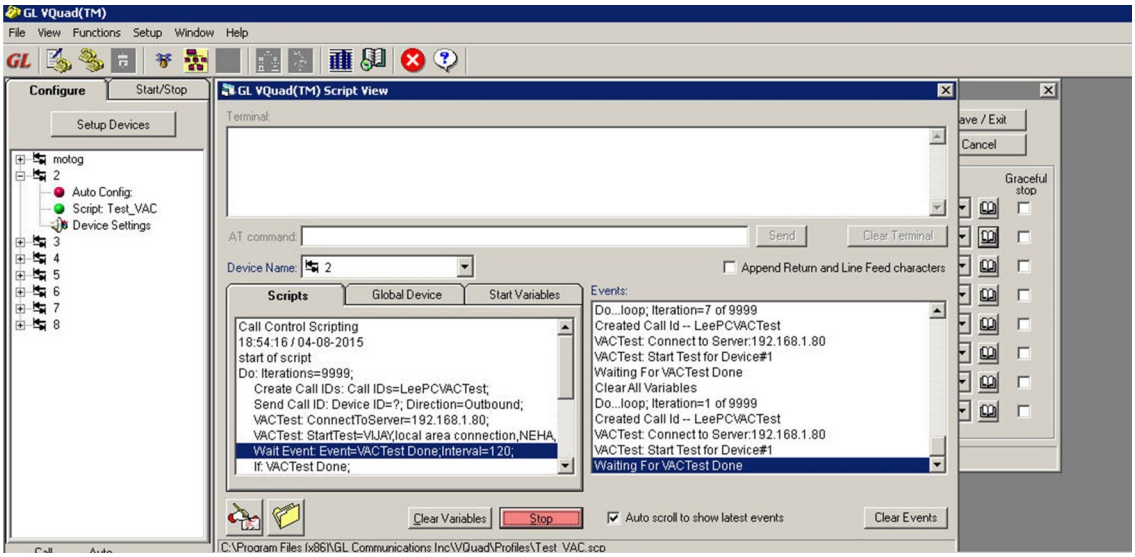

Figure: Automated Video Testing from VQuad™ using Scripts

Video Application Controller (VAC™)

Video Application Controller (VAC) allows VQuad™ and NetTest applications to use the web services of the VAC Server to automate and control all active Video Test Agents such as to start/stop tests and to obtain the corresponding results.

User has an option to configure unlimited Video Test Plans based on a variety of video parameters. Typical low end video conferencing system characteristics includes:

- Video Codecs supported are JPEG, H.261, H.263, H.263+, H.264, MPEG, MPEG-2, MPEG-4, VC1
- Video Frame rate used for the test can range from 5 fps up to 60 fps
- One to one chat bandwidth of at least 1 Mbps uplink / 1 Mbps downlink; One to many chat may require at least 1 Mbps uplink / 2 Mbps downlink; more bandwidth will be required for better quality
- Minimal one way latency of 150 to 300 ms is needed to avoid double talk, this is independent of video quality
- Resolution (Image size) can vary from - 320 x 240 pixels, 15 frames/sec, 640 x 480 pixels, 30 fps, to 1280 x 780 pixels, 30 fps
- Acoustic echo cancellation is necessary if speakerphones are used to improve audio quality
- Group of Pages (GOP) structure – a group of frames are treated together to achieve greater compression

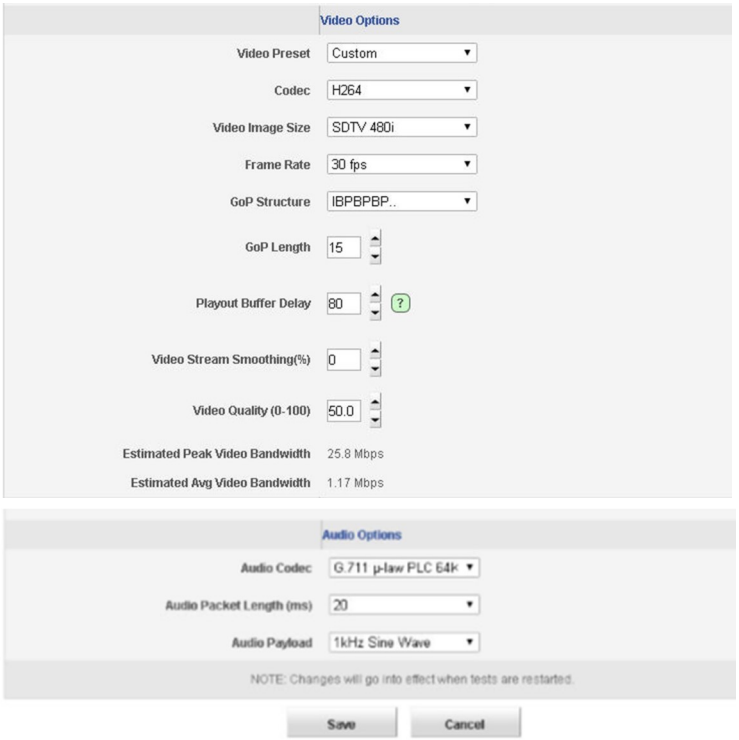

Figure: Video Conference Test Plans Configurations

Video Results Display in VAC Server Web

The Video Conferencing test records are displayed in the VAC Server web UI, which contains a detailed performance metrics per video conferencing test call. The results include General Test Information with Endpoint Details, Video Quality (Relative MOS-V), Audio Quality (MOS-A), Audio-Video Quality (Relative MOS-AV), IP Network Health, Signaling Performance, and Call Config Info.

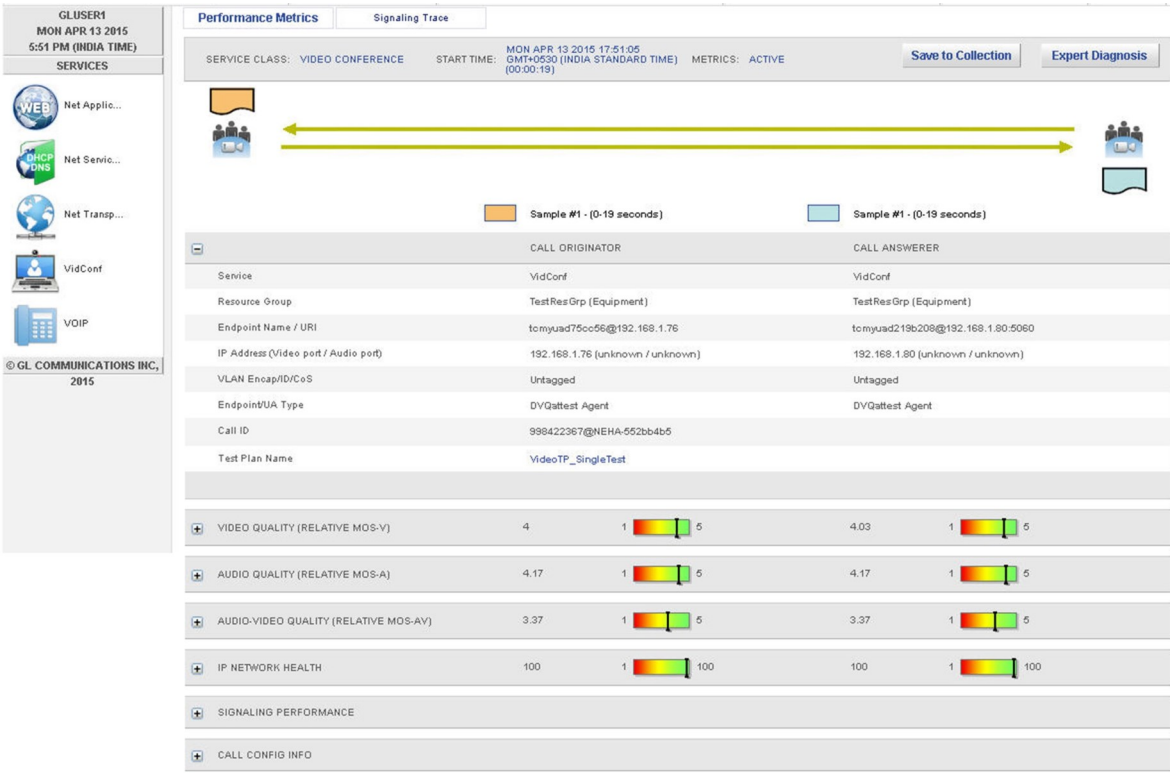

Figure: Performance Metrics - Viewing Endpoint Details

Figure: Video Quality (Relative MOS-V) Result View

Video Results Display in WebViewer™

The video test results from VQuad™, VAC, or MDC are automatically sent to the VQuad™ Central Database and can be viewed/queried using the GL's WebViewer™ (web browser).

WebViewer™ is a simple, easy-to-use Web browser which can operate on both PC and Mac systems (including iPhone and iPad).

- Multi-user support, and user-friendly interfaces are remotely accessible via browser based clients
- Central Database query via web interface to display results in both tabular and graphical formats.
- Results also include Video test results such as Video MOS, Audio MOS, and Audio/ Video MOS along with a variety of analytical metrics and quality metrics
- Filter results using user-defined search criteria.
- Customized Reports and test statistics.
- Google Mapping for all the Results and Events along with Mobile Device information for the available GPS co-ordinates

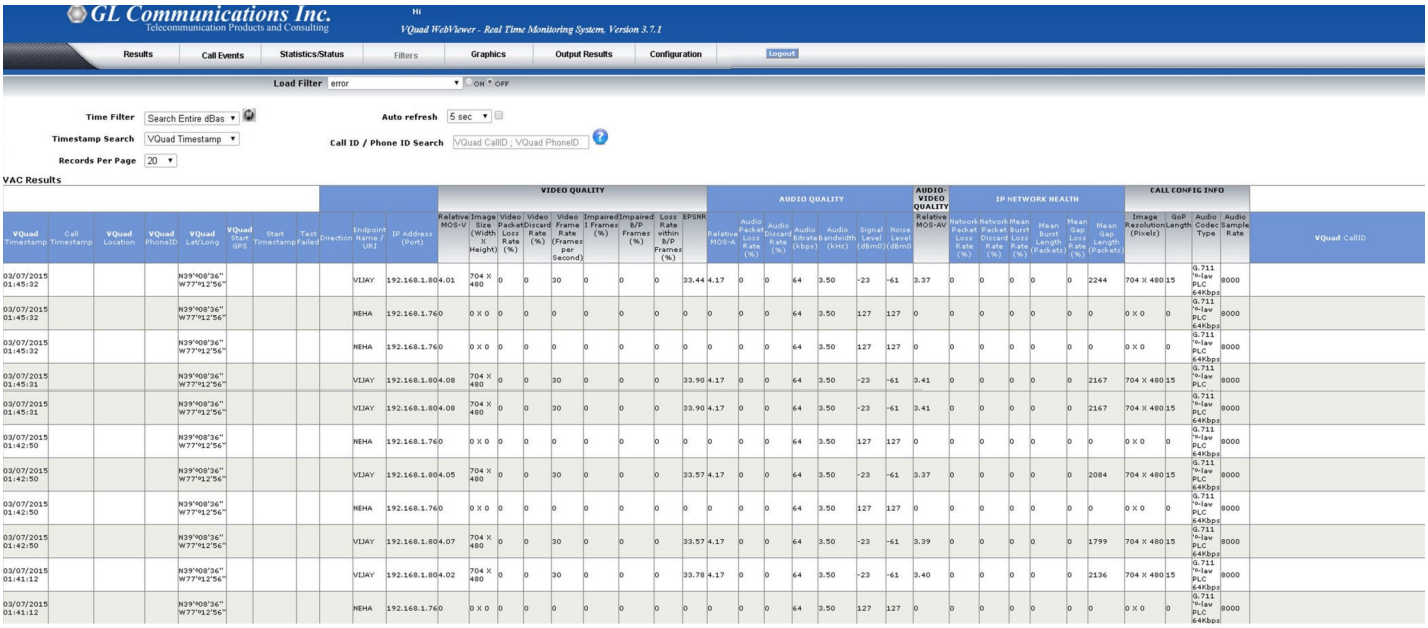

Figure: WebViewer™ Video Test Results View

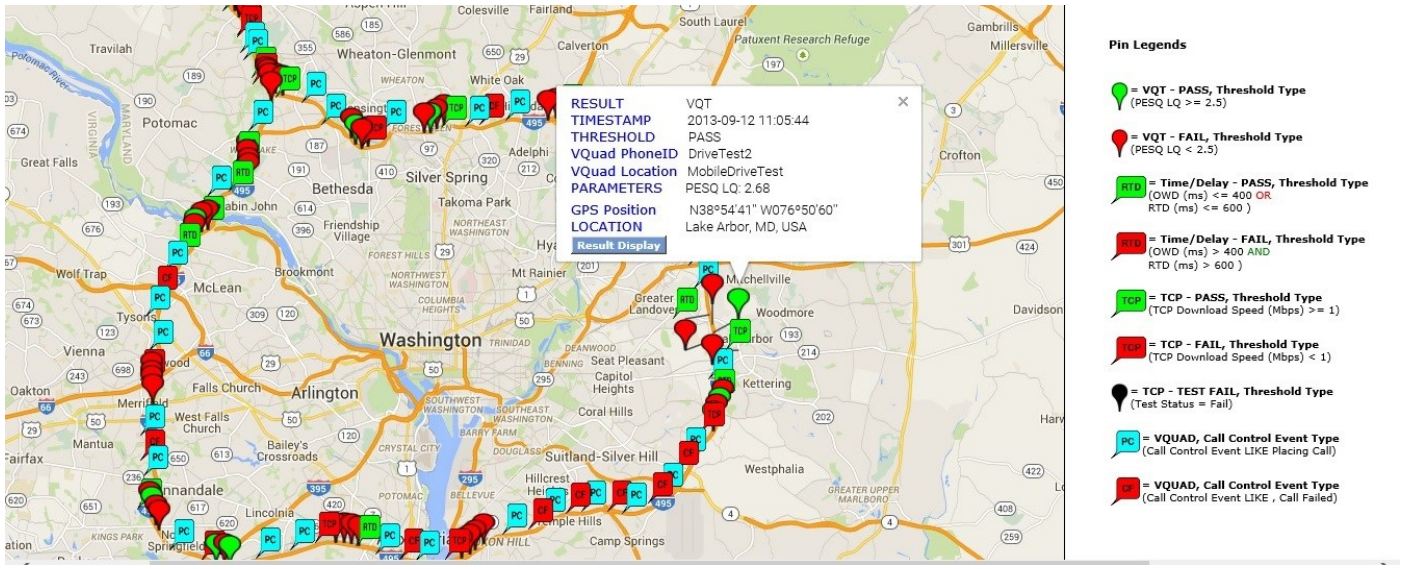

Figure: Google Mapping Test Results

Buyer's Guide

Item No	Product Description
VQT650	VAC (includes VAC Server and VAC companion software)
VQT661	VAC Windows/Linux Agent, single license, 5Mbps
VQT662	VAC Windows/Linux Agent, single license, 10Mbps
VQT663	VAC Windows/Linux Agent, single license, 50Mbps
VQT671	VAC Android Agent, single license, 5Mbps

Item No	Related Software
VQT600	VQuad™ NetTest Data Server Solution (Requires annual license renewal to remain functional)
VQT601	Mobile Device Controller (MDC) Software
VQT040	WebViewer™
VQT241	VQuad™ Dual UTA with Balanced, Analog FXO, PTT, and Phone Handset Interfaces
VQT002	Voice Quality Testing (PESQ only)
VQT006	VQT w/ POLQA Server License
VBA032	Near Real-time Voice-band Analyzer
EMU037	Echo Measurement Utility (EMU) Software

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

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