VoIP & Streaming
Test & Measurement

KEYNOTE®
The Mobile & Internet Performance Authority™

Keynote VoIP Competitive Intelligence Study

Understand how Your Customers Perceive Your VoIP Service Reliability and Quality Relative to That of Competitors

Did you know that a provider of residential VoIP services typically takes up to two years to break-even on a new subscriber? The VoIP gold rush has attracted several players to the market—both hardware and software based—making the quest for new customer acquisition more expensive than ever before.

Why Keynote?

- Unparalleled accuracy in representing the true end-user experience.
- Competitive trends rather than isolated provider focus
- Actionable insights for operations teams to enhance competitive edge

Plain old telephone service (POTS) subscribers are signing onto VoIP at an exponential pace, but the available provider choices are also growing at an unprecedented rate. Losing a subscriber to a competitive VoIP service, given the high acquisition costs, is a provider's worst nightmare, especially when such customer attrition is caused by VoIP performance problems, which can be proactively managed.

Keynote Systems—an independent, third party authority on VoIP performance—enables VoIP service marketing teams to proactively understand how their end-users perceive their service reliability and audio clarity relative to that of competitors. Consequently, marketing and operations teams can effectively utilize their resources and infrastructure investments to enhance their competitive edge and customer satisfaction.

What existing VoIP "monitoring" tools don't tell you

Most VoIP monitoring tools today are network focused and take a bottom-up approach by measuring the network jitter, packet loss, and latency in the core network. However, network issues may not entirely represent the user-experience since audio problems arising in the last-mile with adapters or Internet Service Provider infrastructure are not captured. Additionally, audio quality for calls that traverse the end-to-end network including Public Switched Telephone Networks (PSTN)—the most commonly used in the residential market—cannot be monitored either. Ultimately, most existing measurements, no matter how detailed, measure a provider's service quality in isolation since competitor's performance metrics for apples-to-apples comparison are not readily available. Thus, VoIP service providers invest considerable efforts in monitoring detailed network metrics, which though important, do not provide a holistic picture of service quality relative to competitive services available to end-users. Managing the customer experience requires creating user activity consistently across various competitive VoIP services simultaneously. The resulting top-down metrics collection is used to benchmark the user experience

Keynote VoIP Competitive Benchmarking monitors

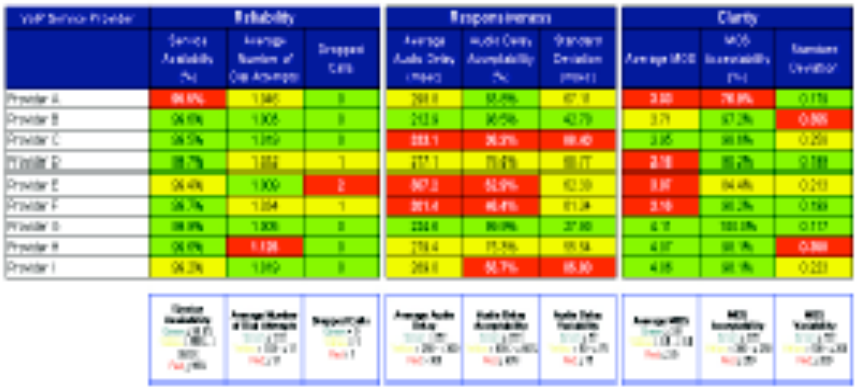
- Service Reliability based on availability, dial attempts and dropped calls
- Audio Quality based on Mean Opinion Score (PESQ), Percent Acceptability MOS Variance
- Audio Delay including percent acceptability and delay variance

across various providers. That's where Keynote's VoIP Competitive Intelligence subscription service comes into the picture.

Keynote VoIP Competitive Intelligence: Monitor what matters—the End-User Experience

For over a decade, Keynote—widely recognized as The Mobile & Internet Performance Authority—has provided 2200 customers with unbiased insights into customer experience with critical web, streaming and wireless applications. Keynote in the summer of 2005 launched the industry's first VoIP Competitive Intelligence service to provide voice service quality competitive benchmarking and trending information to the VoIP service providers. Keynote has rolled out an extensive infrastructure of automated Voice Perspective agents and responders nationwide to create user activity across various providers and over various carrier networks. The resulting customer experience measurements provide actionable insights to enhance a voice service provider's competitive edge.

Keynote works with VoIP providers to identify target markets and competitors in each of these markets. Keynote leverages its extensive agent infrastructure to configure a caller-receiver topology, including placement of calling agents in apartments to create the user interaction with a VoIP service. Calls are then automatically placed every 30 minutes for each caller-destination city pair over each VoIP service and connection (DSL / Cable / Business Class) including competitive services. For each call placed, Keynote collects detailed network metrics during the call establishment phase as well as during transmission of audio payload. Additionally, Keynote conducts audio fidelity analysis to identify issues such as hum, hiss, static or clipping that affect the user experience. Customers can then use Keynote's periodic reports or the real-time Operational Monitoring Solution to analyze the provider's performance relative to each competitor in various cities over various connection types and identify the root cause underlying performance issues. Using Keynote's actionable recommendations, providers can implement



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infrastructure tuning or software upgrades to enhance their competitive edge and minimize customer churn as well as highlight their service quality in customer acquisition campaigns.

How Keynote's VoIP Competitive Intelligence Study Subscription Service Works.

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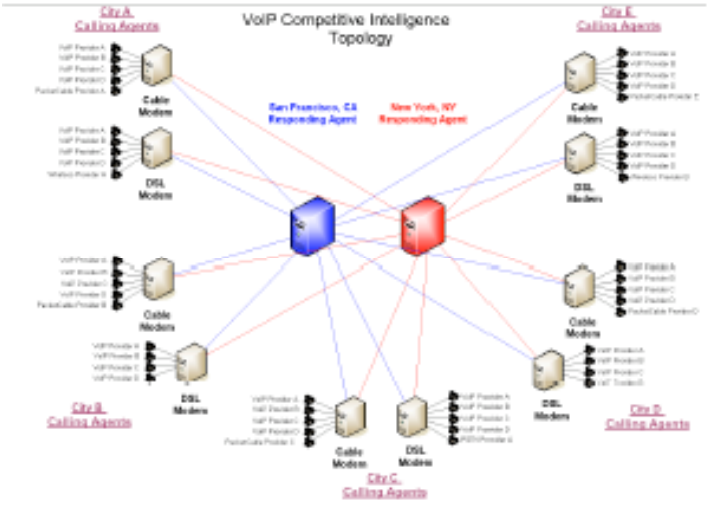
Voice Competitive Intelligence Topology



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