Ookla's Speedtest Certified™ Methodology

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Introduction

Ookla's Speedtest Certified™ solution provides a rigorous, data-driven evaluation of a property's connectivity network, helping to determine whether it meets the performance, reliability and business objectives of both network and venue owners and users alike. This document outlines the certified data collection methodology, the measurement process, and the resulting data points that inform assessments across locations, devices, and use cases.

Speedtest Certified™ establishes industry criteria for measuring real-world connectivity performance across commercial and enterprise properties. Examples include commercial office buildings, retail locations, smart campuses, and other types of real estate. The certification leverages existing tools and methodologies from Ookla's portfolio to deliver objective, real-world performance evaluations.

Release 1 focuses specifically on the venue's enterprise Wi-Fi deployment. The certification provides an independent evaluation of a venue's Wi-Fi network performance based on a defined set of best practices against assessed metrics. The assessment primarily uses data from Ookla's existing tools and methodologies.

Speedtest Certified™ Score

A venue's connectivity score is calculated using a structured scoring matrix that measures key Wi-Fi deployment, ISP, QoS, and QoE metrics. Each metric is weighted and thresholds are defined through real-world testing and Ookla's expertise in high-performing networks.

Speedtest Certified™ Score evaluation categories and metrics

Core Performance Metrics, as identified below,are heavily weighted as they directly impact on user experience.

- Wi-Fi Radio Frequency (RF) Quality
    a. Signal Strength and Quality (Primary and Secondary Signals, Signal-to-Noise Ratio): Measures the strength and clarity of Wi-Fi signals received by devices. A higher signal-to-noise ratio indicates a cleaner signal, leading to more reliable and faster connections.
    b. Capacity: Evaluates the Wi-Fi's airtime capacity to handle multiple users simultaneously
- Connection Speed Performance Metrics
    a. Download and Upload Speeds: Measures the rate at which data is received from and sent to the internet, respectively using Speedtest servers. High download speeds are essential for activities like streaming and browsing, while robust upload speeds are crucial for tasks such as video conferencing and uploading large files.
    b. Latency (Ping): Represents the time it takes for data to travel from the user's device to a server and back, measured in milliseconds. Lower latency indicates a more responsive connection, which is vital for real-time applications like online gaming and video calls.
    c. Jitter: Measures inconsistency in data packet timing; high jitter causes choppy calls, video, or gaming.
- Internet Service Provider (ISP) speed
    a. Backhaul Speed and Connection Type: This refers to the capacity and medium through which a venue connects to the broader internet. Backhaul speed determines the maximum data throughput available, directly impacting user experience
- Quality of Experience metrics measure the actual performance users experience during real-world activities like streaming, gaming, and video conferencing.
    - Short Form Video: assesses your network's ability to deliver fast short form video such as TikTok or Instagram Reels without buffering and with high resolution.
    - Web Browsing: How fast and reliably a popular website loads — from the moment you click, to when the page appears, including any delays or failures along the way.
    - Content Delivery: How smoothly and reliably your network delivers content — with low delays, steady timing, and no lost data for fast, clear, and stable experiences.
    - Cloud Infrastructure: How fast, stable, and reliable your connection feels when using cloud apps and services — with low delays, smooth timing, and no lost data for seamless apps, calls, and games.
    - Gaming: How responsive and stable your connection is for gaming — with low lag, smooth timing, and no lost data for fair, seamless play.
    - Messaging: How quickly and smoothly messages are delivered for natural, real-time conversations.
    - Video Conference: How quickly and smoothly video calls connect and stay stable, with consistent timing and minimal data loss for clear, uninterrupted communication.
    - File transfer: How quickly files start, upload, and download, reflecting the speed and responsiveness of your network for cloud services.

Network Configuration and Optimization Metrics, as identified below, are less weighted than Core Performance Metrics, as they reflect why the network performs the way it does or where fine tuning can be made to increase performance of Core Performance Metrics .

- Channel Overlap and Interference: Assesses whether multiple Wi-Fi networks are operating on the same or adjacent channels, which can cause interference and degrade network performance.

- Number and Configuration of Wireless Networks (SSIDs): Reviews the number of broadcast network names and their configurations, as excessive SSIDs can lead to increased overhead and reduced performance.
- Roaming Configurations and Efficiency: Evaluates how seamlessly devices can switch between access points within the network, ensuring uninterrupted connectivity as users move through the venue.
- Spectrum Compliance: Measures the percentage of access points configured to the regulatory domain of the country.
- Type of Authentication and Encryption Protocols in Use: Identifies the security measures in place, such as WPA2 or WPA3 protocols, which aim to ensure that data transmitted over the network is protected against unauthorized access.
- Dual-Band Network: Measures If the same network name is used across frequency bands as some of the client devices may opt for the 2.4 GHz network, even if the 5 or 6 GHz network is faster and more reliable.
- ISP Backhaul Capacity: Evaluates the ISP connection capacity to handle multiple users simultaneously.

Infrastructure Readiness and Resilience.

- Backhaul Connection Type: Connection types (e.g., fiber, DSL, Microwave) influence factors like latency, reliability, and scalability.
- Availability of Redundant and Diverse ISP Connections: Redundancy involves having multiple internet connections to ensure continuous service during outages. Diversity of connections ensures these connections use different physical paths or providers, minimizing the risk of simultaneous failures. Implementing both strategies enhances network resilience and uptime.
- Access Point Model Age: What is the age of the Wi-Fi hardware, is it EOS, EOL? Does it support the latest IEEE802.11 release?
- Presence of Advanced Security Measures (e.g., Management Frame Protection): Checks for additional security features that protect management frames, preventing certain types of attacks and enhancing overall network security.

The pass mark for Speedtest Certification is 70 out of 100 for weighted score.

How do we assess a venue's connectivity

Conducting a Speedtest Certified™ assessment requires detailed planning, accurate pre-survey information, and close coordination between the assessor and the customer. Incomplete or missing details at the preparation stage can significantly affect the quality and completeness of the survey data. To maintain consistency and ensure reliable results, a structured process is followed, beginning with the collection of venue-specific information. For a venue to be certified, a minimum of 70% of the venue area that is accessible to end customers must be verified.

Only Speedtest Certified™ accredited professionals are eligible to conduct assessments.

Prior to the site visit, the customer must provide key details, including the venue's full address, total floor area, number of floors, and business type. Up-to-date digital floor plans are required in supported formats (JPG, PNG, or PDF), clearly scaled or containing reference measurements. The customer must also define the intended wireless coverage areas, including any outdoor zones and provide usage estimates such as expected user density and peak activity periods. Practical access and logistical information, like security escort needs, PPE requirements, and SSID details for testing, must also be shared in advance.

Before arriving on-site, the accredited assessor reviews the provided materials, uploads and scales the floor plans using Ekahau tools, and predefines relevant coverage and usage zones. The assessor must also ensure they meet all access and safety requirements, including PPE and proper identification.

The on-site survey itself combines a passive Wi-Fi scan with real-world Speedtest and cQoE measurements. Using the Ekahau Survey app with integrated Speedtest and cQoE SDKs, the assessor walks all predefined coverage areas in continuous survey mode. At the same time, they connect to the guest SSID and use embedded tools to run Speedtests and cQoE tests across various locations, ideally in every room and especially in high-traffic areas. The assessor must follow a consistent and complete path through the site, including all stairwells, elevators, and outdoor areas if applicable.

Tools and processes used:

1. Standardized form to gather venue information required for site survey and manual data inputting.
    - Used as the basis for creating the venue project file. Information required includes venue information, floor plans, defined coverage areas, capacity and usage expectations, information about access to site and network.
2. Ekahau AI Pro Online
    - Used to create the foundational project file for each venue, which serves as the basis for planning and conducting the site survey.
3. Ekahau Survey Mobile Application with Integrated Speedtest® and cQoE SDKs
    - Paired with the Ekahau Sidekick device, this mobile app is used during on-site assessments to collect detailed Wi-Fi radio frequency (RF) and configuration data, while also running embedded Speedtest and cQoE measurements to capture real-world performance metrics.
4. Ekahau Sidekick 2
    - A professional-grade Wi-Fi measurement device optimized for tri-band spectrum analysis (6 GHz, 5 GHz, and 2.4 GHz), ensuring precise and consistent data collection during the survey process.
5. Ekahau Analyzer
    - A professional mobile app, paired with Sidekick 2 is used to gather information about certain aspects of Wi-Fi network capabilities from management frames.
6. Speedtest Certified™ Portal
    - A secure web-based interface used to enter additional venue data not captured automatically—such as details on ISP backhaul speed, redundancy, and connection type—to complete the certification dataset.

How do we process the data we collect

Wi-Fi performance, network configuration, and security metrics are automatically processed within the Ekahau Cloud platform. This ensures alignment with Ekahau's existing proprietary machine learning algorithms and provides consistent, reliable analysis of wireless network environments.

Similarly, Speedtest® and Consumer Quality of Experience (cQoE) metrics gathered through Ookla's SDKs are processed in Ookla's data infrastructure. This processing adheres to Ookla's established methodologies, delivering accurate insights into network performance and user experience.

Supplemental Contextual Data collected during the assessment process is processed within Ookla's data infrastructure, representing an enhancement over previous methodologies. This advancement allows for a more comprehensive analysis of network performance and reliability.

Furthermore, a Speedtest Certified™ Score, along with a pass/fail designation, is generated through Ookla's data infrastructure. This new capability provides a standardized evaluation metric, facilitating clearer insights into network quality and aiding stakeholders in making informed decisions.

All data processing follows Ookla's data privacy and practices.