CloudCheck® TruSpeed

Highlights

- Accurate, automated speed testing
- Software-only solution supports over 100 platforms
- Hardware Agnostic
- Patented Wi-Fi speed measurement technology
- Cloud-Based Machine Learning
- Big data analytics
- Compliant with EU regulation
- Supports the CloudCheck Wi-Fi management solution

Accurate Speed Measurements for ISPs, Wholesalers and Regulators

TruSpeed is a CloudCheck® software module that enables internet service providers (ISP), communications regulators, and wholesalers to gain visibility to true broadband and Wi-Fi throughput across the entire network. TruSpeed is the only software solution that uses cloud-based machine learning to intelligently monitor and measure both broadband and Wi-Fi speeds while assessing bottlenecks across five key points in the network. Other solutions only measure broadband speeds (not Wi-Fi), can disrupt subscriber experience, or are constrained by the limited number of measurements gathered across a subset of the network. This industry-first capability, available only in TruSpeed, is a hardware agnostic solution that leverages ASSIA's flagship CloudCheck® Wi-Fi and Expresse® patented technologies.

Delivering advertised broadband service speeds by ISPs providers has become critical in today's regulatory environment. Global telecommunications regulators are adopting stringent rules to ensure service providers deliver advertised/minimum speeds, with financial consequences such as allowing consumers to terminate contracts when commitments are not fulfilled.

TruSpeed is designed to enable ISPs, wholesalers, and regulatory agencies to ensure the network fulfills end-user expectations and contractually committed speeds. TruSpeed software provides full throughput visibility of critical segments of the network (figure 1). TruSpeed software leverages ASSIA's unique methods to discriminate between the different stakeholders' responsibility in delivering end-to-end Quality of Service. With TruSpeed, ISPs can now detect and isolate performance bottlenecks in their subscriber's experience.

Unique Technology for Wi-Fi Throughput Measurements

Significant increases in broadband speed greatly impacts delivery of in-home connectivity. Wi-Fi, especially if unmanaged, can limit the bandwidth available to end user devices.

ASSIA has developed a unique technology for Wi-Fi speed measurements. While other solutions rely on factors such as RSSI and PHY (or link) rate, TruSpeed utilizes a software agent to measure actual user throughput without the need for any software on the end user devices (figure 2).

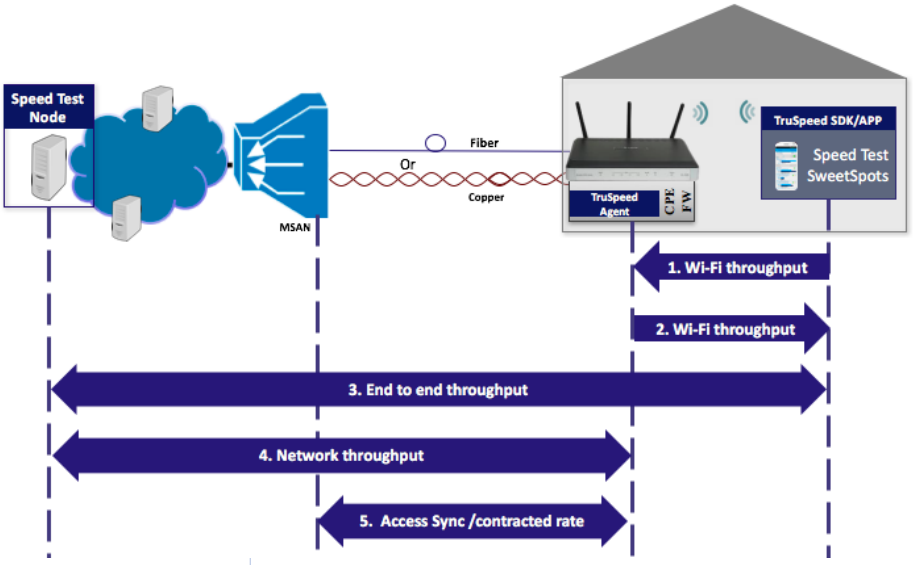

Figure 1: TruSpeed Throughput measurements.

Figure 2: Wi-Fi probing

Pinpoint issues quickly during tests and troubleshooting.

Deliver valuable data for network planning and marketing.

Powerful Reporting

Individual line visibility for troubleshooting

TruSpeed performs regular scheduled or on demand tests. All the individual results are stored in the TruSpeed server and can be queried for reporting, analyses and troubleshooting purposes.

For example, upstream and downstream speed can be plotted per household to show its evolution over time compared with the service plan (figure 3). Broadband speed can be compared to average speed of Wi-Fi to detect a bottleneck (figure 4). Traffic data can be retrieved to better understand usage of the consumer network and to detect congestion (figure 5)

.

Figure 1: Measured speed vs. Service Plan

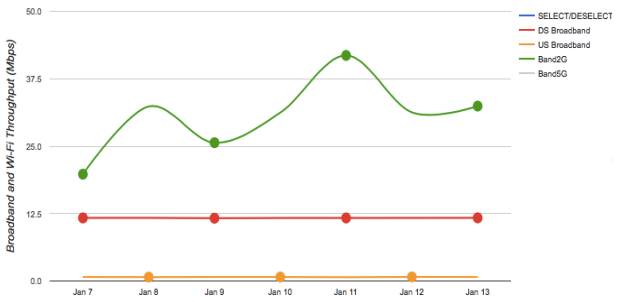

Figure 3: Average Broadband Speed vs. Average Wi-Fi Throughput

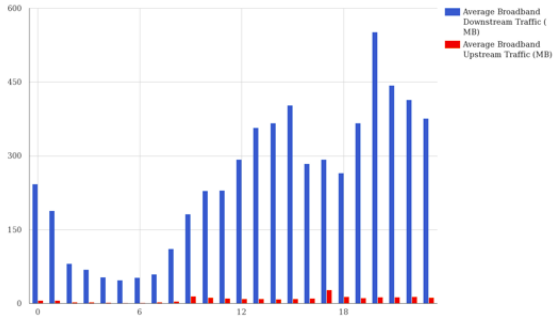

Figure 2: Hourly data usage

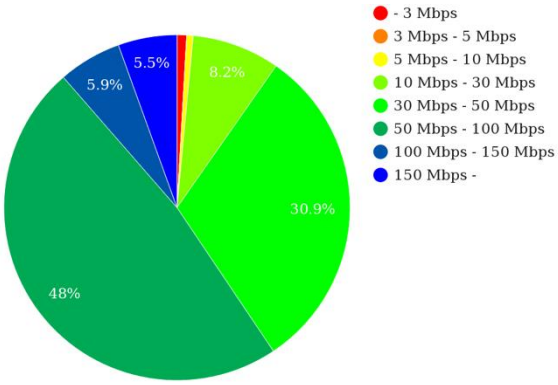

Figure 4: Wi-Fi throughput distribution for 2.4Ghz band

Full network view for planning and reporting

In a growing number of countries, regulatory agencies require service providers to directly or indirectly provide speed data to the public. Traditional approaches rely on crowd sourced data or expensive hardware. Both lack accuracy and reliability because of the limited sample size across the network. With TruSpeed all lines of the network are tested on a regular basis (included during peak hours). All data collected can be aggregated for regulatory compliant reporting. Data usage gathered can be use by planning departments for resource allocations and marketing.

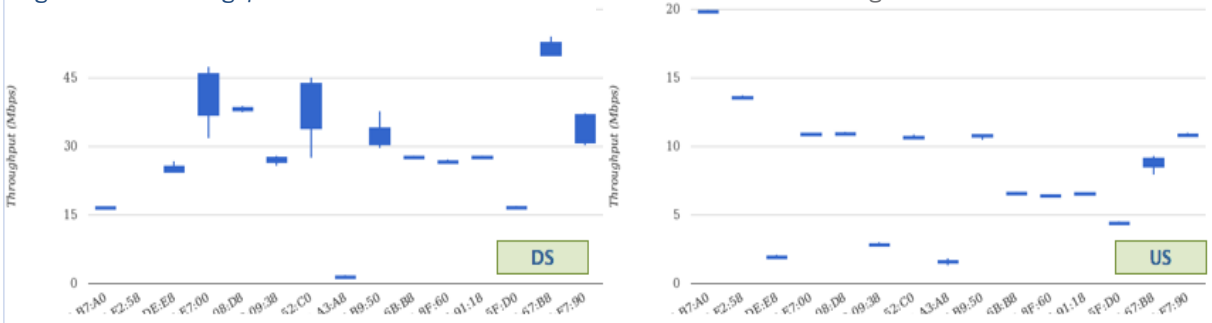

Figure 5: Variability of the downstream and upstream speed

Assess the experience of all the users.

Provide accurate information to future customers.

Unmatched Analytics and Diagnostics Thanks to Big Data

Broadband and CPE health diagnostics with CloudCheck

TruSpeed can provide ISPs with speed test data impacting the end user's Quality of Experience. TruSpeed can be used with the CloudCheck Wi-Fi management solution for additional, advanced, and comprehensive diagnostics.

With multiple devices simultaneously connected to in-home networks, end users can lose track of concurrent usage and could misinterpret slow network response and performance as caused by slow broadband speed instead of network congestion. TruSpeed can detect and flag network congestion, so service providers can determine when to upsell higher service tiers proactively.

CPE hardware health indicators related to CPU utilization, memory, and temperature are monitored can be flagged when measurements fall outside normal operating ranges. Excessive power cycles are also detected to detect power supply issues.

In case of failing to deliver the expected speeds to the end user, the ISP or Wholesaler can utilize TruSpeed network diagnostics. Very powerful dispatch recommendations with fault localization or demarcation and corrective recommended actions can be provided. This can drastically reduce the time to proactively restore the expected speed.

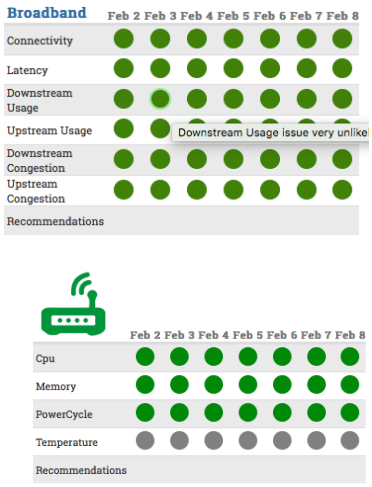

Figure 6: Broadband and CPE health KPIs

Speed predictor

Being able to provide accurate information to a new customer at the point of sale is critical to avoid disappointment, complaints, and churn. However, a statistical approach based on national congestion ratio could lead to over- or under-estimates of the speed available. The speed predictor feature of TruSpeed will rely upon the existing customers' currently available speeds in the neighborhood. In case of xDSL, noise patterns can be accounted to improve prediction.

Advertised speed fulfillment

All throughput data collected is compared to advertised speed to ensure it fulfills the applicable Service Level Agreement as defined by the service provider, wholesaler, or regulatory agencies. Advertised/Expected speed can be provisioned into the TruSpeed Server or can be deduced from the technical configuration collected. If Advertised/Expected speed is provisioned, inconsistency with the technical configuration provisioned can be detected. Data can also be aggregated at a different level to detect recurrent network congestion.
For wholesaler and regulatory agencies, it can be of interest to monitor the quality of each Service Provider. TruSpeed can correlate speed fulfillment ratios of different ISP covered. The data can be easily communicated to the end-user.

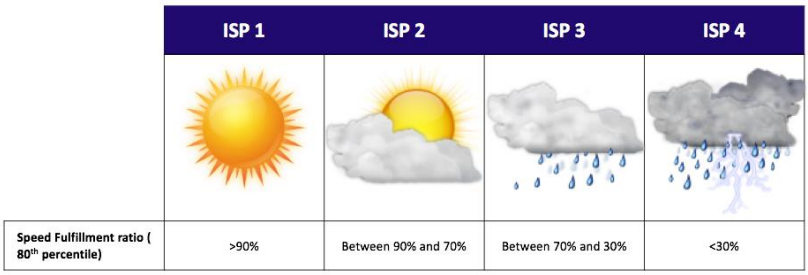

Figure 7: ISP speed fulfillment report for end user

Additional Products and Services:

- ✓ Full CloudCheck Wi-Fi management Suite
- ✓ Partial or full hosting of the solution
- ✓ Management of Off-Net test nodes
- ✓ Customized reporting for regulators
- ✓ Professional services/consultancy on Quality of Experience

A Flexible and Modular Architecture

TruSpeed Agent is a software measurement agent installed on the Customer Premise Equipment (modem, residential gateway etc.) that allows scheduled tests to be executed automatically. This agent performs tests that are directed towards test nodes as well as towards single-end testing of the Wi-Fi link. This unique approach enables detection of whether Wi-Fi is the bottleneck or not. The agent sends on regular basis or on demand, in real-time, the data to the TruSpeed Server. TruSpeed agent is currently supported by more than 100 platforms

TruSpeed SDK/APP can be used as a measurement agent from the end-user device to a test node for an end-to-end view. The end-user can also use the SDK/APP to trigger CPE based measurements. Finally, the APP can provide the end user, through its unique SweetSpots feature, visibility on Wi-Fi throughput limitations as well as self-help to take corrective actions.

TruSpeed Server manages the agents, collects all the data sources and provides powerful real-time and historical analytics and reports. The server exposes as well a set of APIs for easy integration to external tools or OSS/BSS platforms.

Access Network Data Collector (ANDC) is an optional module of the TruSpeed Solution. The ANDC allows collection of technical settings provisioned on access nodes (maximum rate, access technology). These technical settings are usually correlating with the contracted rate and therefore the customer expectations. The ANDC can also collect performance, operational counters per line (like sync rate, retrains, Code Violations, BIP8 errors) and can detect node congestion, thereby detecting speed impairments caused by the access network. Lastly, the ANDC can store the network topology, which can be used to automatically correlate and predict speeds for new customers based on existing neighborhood performance.

Speedtest Nodes are positioned on or off network for the throughput measurements.

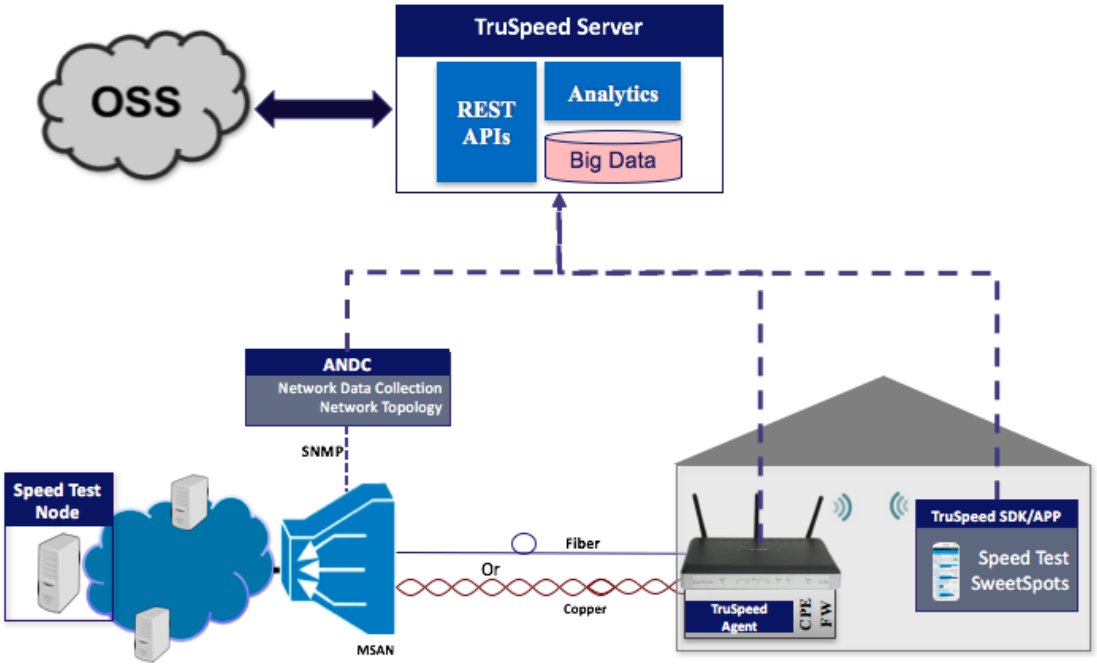

Figure 8: CloudCheck TruSpeed Architecture

TruSpeed is part of the CloudCheck product family and can expanded to support the full CloudCheck Wi-Fi Solution.

Contact ASSIA today

+1.650.654.3400
or email
sales@assia-inc.com

ASSIA

203 Redwood Shores
Parkway, Suite 100
Redwood City, CA 94065
Tel: +1-650-654-3400
Fax: +1-650-654-3404
www.assia-inc.com

P/N MDC00110101

cloudcheck