

SAMKNOWS TECHNICAL DEFINITIONS

Capitalized terms not otherwise defined herein shall be deemed to have the meanings set forth in the Offer Description.

Account	The online account set up by SamKnows to enable You to access SamKnows One.
Agent	The Agents perform the measurements and carry out data collection. Agents may be provided in the form of an Android SDK, iOS SDK, Router Agent, or Whitebox. Agents may be purchased by You under an Order and Licenced to You by SamKnows under the terms of the Agreement and in accordance with the usage terms set out in the Router Agent, Android SDK and iOS SDK Schedule and Whiteboxes Schedule, as applicable.
Analytics	Analytics allows Authorized Users to chart metrics via line charts, bar charts, scatterplots and tables to make the data useful and easy to spot changes and make comparisons. Any data which has been charted can then be exported as a CSV. Charted data can also be saved as a pre-set to use in Dashboards, Reports or viewed by other Authorized Users with a SamKnows One Log-In.
Android SDK	The SamKnows Android SDK contains the following components: <ul style="list-style-type: none">• A software licence agreement that outlines the terms under which the SDK has been provided• A binary Android archive (AAR format) for the SDK core, including configuration, test server selection and reporting• A binary Android archive (AAR format) for the Tests: download speed, upload speed, latency, packet loss, jitter, web browsing and YouTube• Automatic selection of the most appropriate measurement server, including failover if a server is offline.• Automatic collection of Test Data and Environmental Data, and reporting back to SamKnows One.• Accompanying Documentation and sample code that details how to use the library in both Java and Kotlin.• Source code for a sample application that utilises the SDK.
BigQuery	BigQuery is the proprietary Google big data store that SamKnows uses for long-term storage of measurement data and metadata. This provides very high scalability. Historical measurement data is queried from BigQuery.
Cellular Testing	The ability to use the Android SDK and/or iOS SDK to test cellular (mobile) networks.
Cloud Test Servers	Test Servers which are off-net and used by any Agent. Test requests are routed to the nearest geographical Cloud Test Server with sufficient processing and network capacity. SamKnows does not control which server this will be, nor the geographical location of the off-net Test Server.
Consumer View	Allows Authorized User to access SamKnows One in order to run Tests and view Test data for their own home.
Dashboards	The dashboard allows Authorized Users to have a quick view of multiple pre-set charts on the same page to quickly see any anomalies. It uses a grid system that allows them to organise saved charts into a layout that suits. The dashboard can also be viewed in presenter mode (full screen).
Data API (Beta)	The Data API provides read-only access to raw and aggregated measurement results, similar to that available for Analytics. This API is intended to integrate Test Data and Environmental Data into other platforms or backend systems. This could be the historic results for any Authorized User if available on SamKnows One.
Easy Install	A field engineer can scan a MAC address on an Enabled Router: download, upload and latency tests will automatically run on that Enabled Router.
Enabled Router	Your router with a SamKnows SDK enabled, has registered with SamKnows One and which has run at least one Test.
Environmental Data	Information relating to the environment in which the Tests operate in. This is useful for adding context to the Test results.
Home History	Authorized Users can search for an individual Whitebox, Enabled Router or customer using a search box, and then be able to view all performance data for that customer. They can also assign an existing pre-defined Test Schedule to that Whitebox or Enabled Router.
Instant Test	The ability for Authorized Users to start a Test from SamKnows One, subject to having the appropriate Log-In and permissions. The Instant Test carries out download, upload, latency and packet loss measurements via the Instant Test API, between an Enabled Router and the Test Servers. The results are visible in SamKnows One.

Instant Test API	The Instant Test API allows Tests to be executed remotely by a customer in real-time on any Enabled Router or Whitebox using the iOS and/or Android SDK and WebTest and have the result returned synchronously. The time taken for each Test will vary with the Test requested (e.g. a 5 second speed test will result in a total response time of slightly more than 5 seconds).
Integration (iOS, Android, Web)	You may take these SDKs with no support whatsoever from SamKnows, or can optionally purchase an integration package.
Integration (Router)	<p>SamKnows carry out all integrations of the Router Agent into new Routers. The following materials are required in order for SamKnows to carry out an integration into a Router:</p> <ul style="list-style-type: none">• A minimum of two Routers, running a firmware representative of the one being integrated into• Serial/USB console or SSH access to the above Routers, with root access to the Linux shell• A toolchain that matches the firmware on the Routers <p>Before carrying out the complete integration, SamKnows will perform a feasibility study using the materials provided above. The feasibility study assesses the complexity of the integration, the development effort that is required, and also reports on the performance capabilities of the Router with our measurements. In this instance, an SDK tailored for the Router in question will act as the final deliverable, including Documentation detailing how to install it into the final firmware image.</p>
iOS SDK	<p>The SamKnows iOS SDK contains the following components:</p> <ul style="list-style-type: none">• A software licence agreement that outlines the terms under which the SDK has been provided• A binary XCode Framework containing the tests: download speed, upload speed, latency, packet loss, jitter, web browsing and YouTube• A binary XCode Framework containing the SDK core, including configuration, test server selection and reporting• Automatic selection of the most appropriate measurement server, including failover if a server is offline.• Automatic collection of Test Data and Environmental Data, and reporting back to SamKnows One.• Accompanying Documentation and sample code that details how to use the library in both Swift and Objective-C.• Source code for a sample application that utilises the SDK.
Log-In	Each unique username and password log in access provided by SamKnows to You or generated by You in accordance with the terms of use set out the SamKnows One schedule, for access to SamKnows One.
Log-In Allocation	Administration of your SamKnows One Log-Ins to add, edit or delete Authorized Users based on the number of licences available.
Metadata API	The Metadata API allows you to attach supporting metadata to Whiteboxes or Enabled Routers. This includes items such as ISP, package, network topology, service tier and time zone. You can also create entirely custom metadata fields that are specific to your network. This metadata can then be used in SamKnows One Analytics when analysing measurement results.
MySQL	MySQL is a relational database that SamKnows use to store user data, Whitebox data, Router data, app data and metadata. This is a far smaller database than the one hosted in BigQuery, but receives a far higher volume of reads and writes for transactional data.
Object Code	Computer programs and/or data which can be interpreted and acted upon by a hardware platform/operating system without the need for any external update.
Off-net Test Server	Test servers managed by SamKnows for use by You.
On-net Test Server	Can be either virtual machines or dedicated hardware. For dedicated servers, SamKnows strongly recommend that they only operate as Test Servers and are not used for any unrelated purpose (for example, as a web server or file server). On-net Test Servers require the use of On-net Test Server Software.
On-net Test Server Software	The SamKnows proprietary Software which enables a Linux-based server to operate as a SamKnows Test Server, which serves as an endpoint for Agents to carry out measurements against.
Panel	A logical grouping of SamKnows Agents owned and operated by SamKnows which may be licenced to a You under a Order for data licensing.

Raw Data Export	A compressed file provided daily, containing one CSV file per Test. The compressed file will include data for the previous day and will be made available by SFTP within 24 hours.													
Real Applications and Content Providers	The Agents also perform measurements against real applications and content providers as outlined in the Tests definition. Please note that real applications and content providers update their systems from time to time, which is outside of the control of SamKnows, and SamKnows cannot guarantee that measurements against real applications and content providers will be un-interrupted, or stop working permanently.													
RealSpeed Test	The ability for an Authorized User to start a Test, via the Instant Test API from: an iOS or Android application using the SamKnows iOS SDK and Android SDK (supported operating systems only), or via a web site or the RealSpeed Website using the SamKnows WebTest (supported browsers only) and see the results of that test in the application or browser. A RealSpeed Test consists of (1) a download, upload, latency and packet loss test between a Enabled Router and one of the Test Servers, and (2) a download, upload latency and packet loss test between the device and one of the Test Servers, except for when running in a web browser, where the packet loss test is unavailable. The Test will measure from the application or browser and/or the Enabled Router. Both endpoints test against the Test Servers.													
RealSpeed Website (Beta)	A SamKnows managed, maintained and controlled, publicly available website from which a RealSpeed Test can be performed.													
Reports	Reports in SamKnows One allow you to save a series of related pre-set charts, together with explanations.													
Router	Any broadband customer premises equipment owned by You on which the Router Agent may be integrated or embedded.													
Router Agent	<p>The Router Agent contains the following components:</p> <ul style="list-style-type: none"> • A software licence agreement that outlines the terms under which the Agent has been provided • Binaries for the individual Tests • Third party libraries SamKnows depends upon, delivered as shared libraries • Binary for the cross-traffic detection service • Binary for the management client that allows configurations and test schedules to be remotely updated ("LMAP client") • Binary for the triggered testing client, which enables realtime measurements to be invoked remotely over a persistent WebSockets connection. • Automatic collection of Test Data and Environmental Data and reporting back to SamKnows One. <p>The Agent is delivered as a single tarball containing a filesystem overlay which should be incorporated into the target firmware build.</p>													
SamKnows LMAP Controller	Whiteboxes and Enabled Routers retrieve their test schedule and configuration from our LMAP Controller, such as which tests to run and the frequency of those tests. LMAP is an open standard from the IETF designed specifically for the management of large scale measurement deployments. SamKnows uses a JSON data model over a TLS transport for interacting with our backend LMAP controller.													
SamKnows One	SamKnows One provides Authorized Users with a user interface to access the Test Data and other features, based on SamKnows One Log-In type.													
SamKnows One Log-In	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Log-In type</th> <th style="text-align: left;">Single Home Feature</th> <th style="text-align: left;">Multi Home Feature</th> </tr> </thead> <tbody> <tr> <td>Single Home Log-In - Consumer</td> <td>Consumer View</td> <td></td> </tr> <tr> <td>Single Home Log-In - ISP</td> <td>Easy Install Instant Test Home History</td> <td></td> </tr> <tr> <td>Multi Home Log-In - ISP</td> <td>Instant Test Home History</td> <td>Analytics Dashboards Login Allocation Test Agent Management Test Schedule Viewer</td> </tr> </tbody> </table>		Log-In type	Single Home Feature	Multi Home Feature	Single Home Log-In - Consumer	Consumer View		Single Home Log-In - ISP	Easy Install Instant Test Home History		Multi Home Log-In - ISP	Instant Test Home History	Analytics Dashboards Login Allocation Test Agent Management Test Schedule Viewer
Log-In type	Single Home Feature	Multi Home Feature												
Single Home Log-In - Consumer	Consumer View													
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Scheduled Test														

The ability for Authorized Users, subject to Authorized Users having the appropriate Log-In and permissions, to set a test schedule in SamKnows One for tests to run on an Enabled Router against a pre-defined schedule. The LMAP Controller API instructs the Enabled Router which tests to run and the frequency of those tests. The test schedule will consist of those tests available in the Enabled Router, subject to the version of the Agent that has been integrated and the availability of the applications being tested, which may change over time due to factors outside of the control of SamKnows.

Source Code	Computer programs and/or data in human-readable form and on suitable media in such form that it can be translated or interpreted into equivalent Object Code.
Test Agent Management	View and edit Agents and Metadata. This also allows you to import and export Metadata for Agents.
Test Schedule Viewer	View existing pre-defined test schedules and associated targets, along with a list of which Routers are assigned to each.
Test Servers	Test Servers act as an endpoint for SamKnows agents to run measurements against. These test servers can be deployed "off-net", which means outside of an ISP's network, or "on-net", which means inside an ISP's network. No Test Data is stored on the test servers; they simply act as endpoints to generate and receive traffic.
Test(s)	The active tests used to measure internet performance, that generate specific types of Test Data.
Test Server Discovery	When a Test is initiated the SamKnows backend will provide a list of candidate Test Servers to the Test Agent, and the Test Agent will determine the best server to use via a short latency check to each.
WebTest(Free Trial)	SamKnows provides RealSpeed for integration into third-party web applications. This includes the following: <ul style="list-style-type: none">• A URL which is be installed via an iframe into a third-party web application.• Automatic detection of an Enabled Router/Whitebox in an Authorized User's network, and execution of tests on that Enabled Router/Whitebox if available. No Log-In to SamKnows One is required to use this functionality.• A browser-based Test for download speed, upload speed, latency and jitter.• Automatic selection of the most appropriate Test Server.• Automatic collection of Test Data and reporting back to SamKnows One.
Whitebox	The Whitebox 8 is a purpose-built hardware measurement agent manufactured by SamKnows, capable of measuring fixed-line broadband connections of up to 1Gbps. It supports a wide range of Tests, can detect the presence of user-generated cross traffic, and includes automatic collection of Test Data for capture by the application, and reporting back to SamKnows One.