

A graphic illustration for the Philips HealthSuite device cloud. It features a large blue cloud in the center. To the left, a white box contains the Philips logo and the text 'HealthSuite device cloud'. Below this, a blue circle contains a white medical cross and minus sign. A blue bandage with a white dot is positioned below the cloud. To the right, a smartphone and a medical device are connected to the cloud by blue lines. Orange curved lines above the cloud represent wireless signals.

PHILIPS

HealthSuite
device cloud

Confident connectivity

Secure, scalable and robust device cloud services

Consumers today are used to a connected world, where devices, apps and services work seamlessly in the Internet of Things (IoT). Now there is a solution that makes connecting your products simple and effortless, and lets you focus on what matters most—your customers.

The **HealthSuite** device cloud offers proven, reliable cloud connectivity services on a global scale. It supports any kind of connected device or mobile app, and is backed by more than 10 years of experience with millions of products already supported by the platform.

Offered as a Platform-as-a-Service (PaaS), you avoid the cost and effort of setting up, maintaining and operating your own backend. Instead, your connectivity services, such as firmware downloads, device remote control and data collection, are handled easily and smoothly through our scalable platform.

The Philips **HealthSuite** device cloud helps you:

- Reduce time-to-market: choose from a catalogue of standardized and ready-to-use services
- Lessen your operational costs: The platform's scale allows us to offer a more cost-effective solution, meaning lower costs for you
- Lower your investments: Platform-as-a-Service (PaaS) model means you only pay for what you use.
- Increase your operational excellence: Our “always-on” approach to customer service and 24/7 support offer ultimate confidence
- Enjoy peace of mind: Our services are proven to be highly secure and audited for compliance

Today, the Philips **HealthSuite** device cloud is already serving **millions of products** in the areas of consumer electronics, lighting and healthcare.

Platform features

Device portal

Each device gets its own unique key material, which is used for authentication with our device portal. When a device or mobile app first makes contact with the portal, and it recognizes the key, we know it is an authentic and authorized device and communication can be decrypted.

Based on the device type, geographic location, firmware version and other parameters the device gets served with a set of URLs. These URLs point to the locations where online services are available for this device, for example, firmware downloads and registrations, or product-specific services such as audio or Smart TV services.

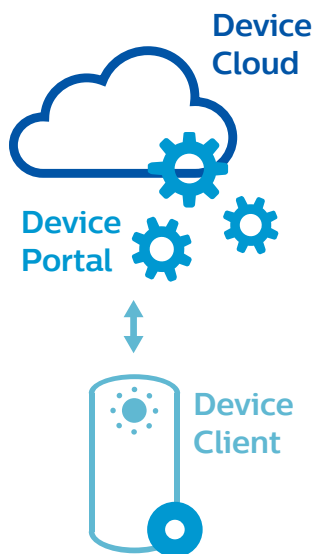
The device portal is technically organized in such a way that it is highly scalable; the architecture design is inherently capable to handle many device requests simultaneously. Making a robust and fault-tolerant platform ensures a stable experience for the end user.

New portal releases are deployed with utmost care and testing, in such a way that downtime for a deployment is counted in seconds. Our device portal has a proven track record of 99.99% availability, which includes all maintenance activities.

Device client

To use the Philips **HealthSuite** device cloud, a device or mobile app implements our device client SDK.

This device client SDK is a generic piece of software for connected devices that enables them to communicate in a secure way with the platform services. The main objective of this client is to enable a uniform method of communication, authentication and generic, device-



agnostic functionality—supporting any product type, regardless of product technology, such as operating system, chipsets, etc.

The device client is very low footprint and has been successfully implemented in millions of devices already. Ports are readily available for many different platforms and operating systems. A highly skilled, dedicated team is available for helping our customers in the development, porting and testing activities for the device client.

Firmware download

This service allows all types of devices to easily perform firmware or software updates, either of the complete firmware of a device, or a selection of (sub)components.

It will host all firmware and software components, as well as the logic needed to support a smooth distribution. New firmware can be rolled out based on numerous parameters, such as device type, location or device-specific properties.

The service uses a back office system for configuration as well as for safe deployment of all assets. A compliance test process is available to test firmware versions before uploading it to the portal. We use a large-scale global content delivery network to ensure global scalability.

Device control

Consumers or customers can exchange messages between devices or remotely control their devices in an easy and secure way. An application in the device can subscribe for new events to automatically arrive on the device control service.

Secure, fast and reliable **connectivity** for any device

Proven benefits of the Philips HealthSuite device cloud



Automatic
firmware
updates



Remote control
of connected
devices



Data
collection and
analytics



Monitoring,
diagnostics
and reporting



10+ years
connectivity
experience

An application server or other devices can publish events to the device control service. Events are distributed according to subscribed devices.

Events can arrive either through open connections or through polling mechanisms. Our servers support many thousands of parallel open connections. We also offer the capability to send mobile push notifications to most of the mobile platforms in use today.

Data collection

By using a generic, data-agnostic service, the platform can collect and store any kind of data from devices. Devices send messages to highly scalable storage agents on the data collection portal, where the agents store the messages and distribute the messages to their destinations.

A message contains information about the sender and the target, but is generic and can contain any kind of content (payload). The data collection service is not used to inspect or process the content; it is simply a secure and highly scalable channel to distribute the messages to their final destinations.

Data collection can be a valuable resource for:

- Improving your services and winning market share
- Providing new insights to improve your products and reduce service, maintenance, and warranty costs
- Creating targeted marketing and sales campaigns.

Key provisioning

Devices can obtain their unique key material for authentication during the factory production process. However, the key provisioning service allows devices to get their keys online during first use in the field. This service is also used to give unique keys to apps on mobile devices.

Registration

Giving your consumers the opportunity to register their devices or apps can be of great importance to your business, so you can recognize and reward customers for buying and using your products.

The registration portal is a generic service which allows persons to register their products using a product user interface, an app, a website, or directly through a web service.

Mobile applications

In the HealthSuite device cloud mobile apps can directly access the platform services as easily and effectively as a device. This is achieved by integrating the device client library in the mobile app software. The device client is available for most major mobile operating systems.

Remote diagnostics / Remote service

This is a service that allows control and repair of devices in consumer's homes. The purpose is to help consumers with a non-functioning device at home without having to make a house call or repair.

The service initiates when a consumer has a problem with his device and calls the support or service organization. The service agent can decide if the problem can be solved remotely by asking the consumer to start the diagnostics session.

The device sends information to the remote diagnostics portal, which interprets the information and helps the service agent with proposed problem areas and solutions. The service agent can send commands to the device at home, and force it into a new state or configuration.

Support services

Tooling/Back office

All Philips **HealthSuite** device cloud portals are configured with items like device keys, device types, firmware components, etc., through a back office system. This system allows management of all the portals and components for **HealthSuite** device cloud operations as well as for our customers. It acts as the single aggregation point for all configuration information and master data.

The system implements workflows for requests that need to be approved by different parties, like requests for device keys or for firmware deployments.

Agents can access an integrated dashboard of the current portal statuses and are able to view device specific information about customer or consumer devices. The back office is where connectivity data is gathered. This data is used for business management reporting about device usage, types of firmware in the field, countries where the product is used, and more. We add billions of log records annually to the data warehouse, which gives our customers detailed insight and information on device and user behavior.

Technical support and expertise

In addition to our automated early warning systems, the platform is monitored continuously. We have 24/7 alerting procedures in case of problems, through which an automated message is sent within minutes of an incident start. Operator interaction starts on average within 10–20 minutes of the event trigger. Depending on the service-level agreements made with our customers, we warn, act, or take full responsibility for any issues.

Customers and other stakeholders can raise portal related incidents or changes such as new device types via a globally available service tool. A dedicated operations team will follow up on these calls on a daily basis. All changes to the portals undergo extensive functional, regression and performance testing.

Summary

Our depth of experience, combined with the technical abilities and proven performance of the platform, offers customers highly scalable and highly secure services for the Internet of Things (IoT) on a global scale, including a dedicated instance of the platform in mainland China.

We guarantee our unique “always on” approach, helping our customers deliver the best value and experience for the end consumer.

Beyond the described services, we offer customer dedicated solutions where applicable. Think of business-specific connectivity services, smart hosting and storage solutions, monitoring of applications and infrastructure, or Machine-To-Machine (M2M) communications. Let us know your requirements and we partner for a solution.

Visit us at www.philips.com/devicecloud to learn more about our standard services and our capabilities in building customized digital propositions.

