Cloud9 is based in London and is one of the world's leading global roaming and mobile service providers to the travel and IoT sectors worldwide. We have for several years offered our own global SIM cards and a complete infrastructure to support customers, anywhere in the world. It is possible for our clients to operate their own GSM service in a matter of a few weeks.

We have extensive global coverage (in more than 220 countries), and agreements with over 560 operators worldwide.

Being an MNO, rather than a reseller puts us at the head of the supply chain. It allows customers and partners to benefit from the very best commercial rates and support. We are the only MNO in the European Union specialising in global SIM cards and profiles.

More recently the company has started selling the basic digital signatures that form the heart of SIM cards (IMSIs or Profiles). The mobile world is undergoing a game-changing revolution. Just as music, movies and books are now purchased on the Internet, the days of plastic SIM cards are numbered and people will buy their mobile subscription online . This involves downloading the core digital signature that is inside the plastic SIM – the IMSI (International Mobile Subscriber Identity) over the air. No longer will it be necessary to visit a store to buy a piece of plastic. Already Cloud9 are supplying IMSIs to customers who are shipping programmable SIMs and to handset manufacturers that have built-in SoftSIMs. Recent initiatives from the GSMA promoting embedded SIMs (eSIMs) are driving this forward. A standard has already been set for smart watches, fitness bands, tablets and IoT devices which will be enhanced to include mobile handsets shortly.

The company is additionally supplying Profiles to service providers who manage devices connected to the Internet of Things. There is a massive drive here also to use eSIMs that can be remotely provisioned with a mobile service.

Cloud9 are at the centre of this standardisation by being members of the GSMA Remote SIM Provisioning Task Force.

Headquartered in the UK, we have POP's in data centres around the world in order to minimise latency and increase scalability. All of our data centres are fully secure, provide redundancy and have power generator back-up facilities. Our UK based equipment is stored in Telehouse near Canary Wharf with 24x7 support 365 days per year in the event of any emergency. Other components are housed in the Amazon Web Services cloud-based facilities. We can provide Service Level Agreements for both of these data centres on request.

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Cloud9 was established in the UK, Gibraltar and Isle of Man as a domestic Mobile Network Operator obtaining spectrum licences in the Isle of Man in 2007 and Gibraltar in 2010. Around 2011 it was decided that the business would be better focussed on supplying global SIM cards that could be used to save roaming charges. The Gibraltar spectrum licence was sold to another company. The business relocated its core network to Telehouse in London and became a subsidiary of BlueMango Technologies Ltd.

The company is privately held with head-quarters in the United Kingdom.

Cloud9 have shipped several million 'Travel SIMs'. They do not supply end users instead preferring to offer a white label service to travel and telecoms resellers. All SIM cards have been branded with the logo of these resellers.

In addition the company now provides the digital signatures ('profiles' or 'IMSIs') that provide a SIM card with the ability to register with a network and function. These can be provisioned over the air to dynamic SIM cards such as programmable removable UICCs, SoftSIMs and eSIMs. They are members of the GSM Association and are involved in the GSMA Remote SIM Provisioning standard for eSIMs that will be released soon.

Remotely provisioned SIMs are gaining traction with smartphone manufacturers (SoftSIMs) and IoT devices (eSIMs).

Cloud9 continue to sell SIMs for travellers on a white label basis in addition to the above.

Its Mobile Country Code is 234 and its Mobile Network Code is 18. TADIG code is GBRC9.

The company has been allocated the following UK number ranges by Ofcom:

4478722, 4477000, 4474409, 4479782, 4479783 and 4475588

In 2013 they acquired the IPR of a UK manufacturer of core networks, Zynetix Ltd. This means that they now possess all of their own IPR with regards to their core network (HLR/SMSC/GGSN/GMSC etc.). and supply core network components to other companies. Through this they have achieved sales as an MVNE. The Cloud9 core network additionally supports 4G (HSS/PDG).

The core network is hosted on Cloud9 servers at Telehouse near Canary Wharf in London. Additional components are hosted in Amazon Web Services facilities around the world in order to minimise latency and provide scalability.

The company has been voted as a Red Herring Top 100 Europe finalist.

SoftSIMs

In order that SIMs may be remotely provisioned with new profiles it requires that the SIM card/device/eSIM contains software called a "Local Profile Assistant" (LPA) by the GSMA.

SoftSIMs differ from eSIMs in that SoftSIMs rely on a proprietary LPA solely in the device whereas eSIMs have the LPA functionality divided between the device and eSIM.

This has the advantage of lowering the BOM cost but presents potential security challenges.

SoftSIMs fall into two different categories – programmable SIM cards and integrated SoftSIMs. Programmable SIM cards look like normal removable SIM cards but have an STK applet (as LPA) loaded on them to facilitate remote SIM provisioning by communicating with an RSP platform. Integrated SoftSIMs remove the need for a physical SIM card, instead using proprietary integrated software in the device to perform the role of the LPA.

Both kinds of devices need both a "provisioning profile" for bootstrap purposes and at least one "operational profile" to provide service during normal operation.

Provisioning Profiles

Cloud9 have supplied several programmable SIM card suppliers with their customised provisioning profile. This profile provides global coverage in just about any country in the world.

A UK MSISDN is allocated to the SIM when the provisioning profile first registers with a network. This provides a mechanism for SMSs to be received by the handset. Sending SMS codes to the handset has become the de facto standard for registering to services such as WeChat. The Cloud9 provisioning solution allow SMS's to be delivered to the SIM even after switching to the operational profile, by home routing the messages and forwarding them to the customer for delivery when the customer informs us that

the IMSI switch has taken place over one of the Cloud9 APIs.

Proprietary Remote Sim Provisioning Platform

It is possible to easily implement a proprietary remote SIM provisioning platform using the Cloud9 STK applet. This applet is placed on the SIM. USSD commands are sent to the Cloud9 USSD Gateway and relayed over a VPN to the customer's server. The server can update profile parameters simply by parsing a response string that is sent back to the Applet for it to process and update the electrical profile on the SIM.

Operational Profiles

Cloud9 also have a portfolio of operational profiles that provide great data, voice and SMS pricing in many countries around the world.

These include the Cloud9 profile and profiles from several donor IMSI providers.

Cloud9 are a member of the GSMA Remote SIM Provisioning (RSP) Task Force.

They have produced a standardised secure Local Profile Assistant and RSP platform (SM-DP+) so that eSIMs from one SIM card manufacturer can be programmed by any certified platform provider. The advantage of this is that it allows a device manufacturer to change their mobile service provider without having to visit the sites into which the devices are installed.

There is still some confusion as to which version of the standard should be used and it is difficult to obtain a compatible eSIM/Profile/RSP platform. The newer version of the GSMA standard (as defined by technical specification SGP22) can be used for M2M as well as consumer applications and the Cloud9 product complies with this specification. Cloud9 do not support older versions of the GSMA standard.

Support for SGP22 in M2M applications is simplified by Cloud9 supplying eSIMs with an on-board LPA.

So in order to provide a guaranteed working eSIM solution, Cloud9 can supply all of the pieces of the jigsaw as a turnkey solution i.e. the eSIMs, the Profiles and the SM-DP+ platform.

Once again a Provisioning Profile has full world-wide coverage while the operational profiles offer very low data pricing in most countries.